Canadian Journal of
PUBLIC HEALTH

VOLUME 48 TORONTO, JULY 1957 NUMBER 7

Changing Responsibilities in Public Health[1]

L. A. PEQUEGNAT,[2] M.D., D.P.H.

THE presidential address delivered at last year's convention of the Canadian Public Health Association concerned itself with progress of public health in Canada. I propose at this time to deal with the changing responsibility brought about by progress, altered viewpoint and the challenge of the new and larger ventures which stand before us.

Public Health, a Mass Movement

One must decide whether to represent responsibility as that for which official public health is fundamentally accountable or as that which embraces as well the many matters in which public health has interest or moral responsibility for action even though authority and implementation may be lodged elsewhere. I lean to the broader concept because of an implied duty and because of the support given a statement I learned to accept long ago, namely, that public health has grown into a mass movement in which the band of workers far outnumbers those who appear on the public payroll. It embodies everything in the life of the individual and the community which influences the question of health and its preservation; the cure and alleviation of illness and maximum recovery; the prevention of unnecessary sickness and premature death or invalidity; the improvement of life expectancy, happiness and security, however far one may ascend in point of years. The duty of the official department, i.e. the one which the taxpayer supports, is that of keeping an eye on the whole program; of attending to the collective problems related thereto; dealing with many individuals, disciplining a few but more generally conditioning the people as a whole to accept the resources—and the limitations—set up for them. It is a job of constant assessment and watching, with the necessary action emerging therefrom.

[1]Presidential address presented at the forty-fifth annual meeting of the Canadian Public Health Association held in Toronto, Ontario, May 27–29, 1957.

[2]Medical Officer of Health, City of Toronto.

It follows that this mass movement depends on more than official effort; it relies on the work of physicians, dentists and nurses, engineers and sanitarians, therapists of every legitimate kind, hospitals, teachers, lay persons, all working here, there and everywhere in the community as individuals, groups, services or agencies.

Furthermore, there must be no loss of sight of the health needs of the people, their reasonable expectations and the facilities for the fulfilment of these expectations. It is the development of this mass concept and effort, with its necessary component, the education of the public for acceptance and use, which, in my opinion, is the greatest example we have of realized change, continuing change and rapid enlargement. The change does not belong altogether to the past quarter-century, but I submit that in no like period of the past have we witnessed the same degree of advance.

Let us now examine the component parts of the public health services. There are three and each has experienced material change.

The Components of Public Health Effort

The Statutory Obligation

Our Public Health Acts, certain companion Acts, and regulations made pursuant thereto are full of direction and authority aimed at sanitation, communicable disease control and the safeguards related to handling, processing, distributing and dispensing of foodstuffs. Requirements therein set out are the inner core of public health effort, the minimum to which public health anywhere must subscribe, and they represent, as it were, a police power.

Enabling Legislation

Enabling legislation empowers municipalities to pass ordinances or by-laws in respect of situations which it is desired to regulate over and above the authority contained in the various Acts, and permits of greater particularity. Such ordinances, once enacted, remove much of the need for precise interpretation of a nuisance; border-line situations can be covered; the field of amenities is opened up. Local needs are served; option is the feature and local conscience the guide. Enabling legislation is found in the Public Health Acts, the Municipal Acts, the School Acts. By-laws, where desired, have appeared in respect of barber shops, hairdressing establishments, pet shops, noises, heat deprivation, rodent infestation, minimum standards of housing, lodging houses, the more or less prevalent desire for some type of medical, nursing and dental inspection of schools, etc.

As I look back over the years I see considerable change in discharge of duty, and changes are continuing. Some of the change may be a theoretical loss, more is an actual gain. The changes have been occasioned by rationalization of approach, by acceptance of desirable alternatives or variables and by a broadening of outlook, especially as part of our urbanization upsurge.

Let us look for a moment at communicable disease control. We have softened materially our rules of isolation and quarantine as these relate to minor communicable diseases. In giving this ground we have assumed considerable responsibility. We have to acknowledge the inevitability of passage through

contagion or at best a postponement of the evil day as the fruit of known controls. We have little escape from such a philosophy, but inasmuch as these diseases are not totally innocuous, yet listed for experience, a changed responsibility becomes one of greater emphasis on good health at time of infection and the best of care during illness. In the case of scarlet fever reasonable relaxations have been considerably compensated for by the fortunate appearance of the newer drugs. On the other hand, our responsibility has become a new one in the case of those of the communicable diseases now capable of effective control by use of specific immunizing antigens. The mere fact that we have these agents imposes a profound duty. Emphasis now is on both herd and individual protection, the former to deter epidemic, the latter to forestall potentially grave single experience. There must be no let-up in the urge towards available active immunization, and facilities for same must be developed and maintained along most expedient lines. The control of the enteric pathogens is well known to us. The research on viral infections stands on the threshold of considerable conquest. One may well wonder, however, if the apathy towards smallpox vaccination in the absence of the disease for several decades may not cause us to awaken some day to find ourselves in a fool's paradise, for one cannot discount the possibilities of present-day rapid transit from remote epidemic or endemic areas. Our immediate project is polio control and we anticipate a high measure of conquest. This task of immunization is greater than any previously undertaken. These are among the newer challenges and represent, one may say, a major change in responsibility.

We enter now the more general field of physical environment. Inasmuch as we must launch at some point where change has been experienced, I choose to start with the training and attitude of sanitation staff. I can recall the time when much of sanitary inspection was exercise of police power—just that. How times have changed since we have learned to select the man of potential ability and to train him that he be recognized as one of pleasing personality, well informed and desirous of advising and helping, firm but reserving his ultimate authority for the careless, the non-compliant and recalcitrant. Much of this is a matter of preparatory training but it is of vital importance that the medical officer shall direct or require direction of the vital in-service training and finishing of every new inspector and of any deficient inspectors.

If sanitation is to be "a way of life" the nuisance clauses of our Public Health Acts fall far short of providing for the optimal. The health- and amenity-mindedness of people is advancing and in this day of prosperity the urge of fairmindedness, the organized welfare drive and the persuasion of people to share the good with all are in full swing. Furthermore, the economy of favourable living conditions is appreciated as never before. Offsetting this somewhat is the growth of urbanization and industrialization and the head start these have on the provision of housing and on suitable neighbourhood preservation. In this complex circumstance it is reasonable to expect that the privileges of enabling legislation are being widely explored in terms of zoning, better building codes, suppression of noises and atmospheric pollution and the preservation and restoration of existing property through codes of minimum standards of housing. It matters not so much who administers the new venture

as that it come to pass to the extent demanded by local conditions. Irrespective of his administrative role in the enlarging overall picture, it is a changing responsibility of the medical officer to lend his initiative and support in the creation and cultivation of plans and in the implementation of authority to the extent that he may be charged with same or enabled to stimulate that of others. As comment I add that anyone who has not yet passed through the travail of regulating lodging houses, if only those offering care to the aged and ill as here in Toronto, has been spared a real demand on responsibility.

Over and above this fundamental issue of housing and neighbourhood, the public holds watch on us in respect of the many premises offering personal service to the population. Barber shops, hairdressing establishments, swimming pools, public baths furnish examples. Other examples are found under the caption of food control. The regulations governing eating establishments have demanded increased supervisory effort and vigilance. The box-lunch business and sale of foodstuffs from mobile vehicles are coming in for serious attention. We are busy formulating a rational course between extremes of little or no action and elaborate systems in respect of the examination and training of food handlers. The interest in the source of raw meats as retailed is moving into the areas of the unsatisfactory slaughtering place and the processing plants. It is not yet clear how the tank holding and hauling of raw milk will affect our total responsibility. One thing is apparent, namely, that there is trend towards more effective legislation in the regulation of public services and supplies, and where legislation increases, responsibility grows and by the same token changes.

The Implied Obligations of Public Health

Basically, these obligations are not dealt with in legislation, in fact do not qualify for such. They are set on a base built of a progressive advance in the science of preventive medicine, intelligent public demand for the full benefits of the advance and the measure of private and official support accorded this demand. The tools of choice are education and demonstration and the subjects are people of all ages. Objectives are health assessment and health promotion. Special points of attack are the interest and attention levels which grow out of the health experiences of the individual and community. The individual is held to be an indivisible whole, physical and mental. In such a program much of the control of the environment and of communicable disease which could be expressed in a police power is now approached not so much through disciplinary methods as through the building up of the habit to conform and to accept naturally those procedures and practices which will protect the individual against discomfort and disease, be it by improved standards of living, personal good habit, immunization or other means. Measures are advanced to reduce the dangers of maternity, infancy and childhood. The school health services are marked for full utilization. Services are established in respect of dental hygiene, nutrition, mental health, industrial hygiene, care of the aged, and general health promotion through health instruction.

The elements just enumerated are the more satisfying functions of present-day public health and to the extent implemented represent the levels of

responsibility of the health authority. For long it has been apparent that a good program demands full-time personnel and in this respect has meant great change to the medical officer class as a whole; it has meant more and better personnel. Once basic program is established, appetite is quickly sharpened for greater conquest, gaps become apparent and new fields open. The needs of older ages become as real as those of the infant and child. Our successes, coupled with those of medicine and the related arts, have changed radically the population structure. Salvage and habilitation of the misfit, grossly handicapped and retarded, are posing increasing challenges. The many forces which are impinging on health are being unfolded. The tempo of living is changing. Mental health as part of public health is becoming better understood. The medical aspects of social security are most impressive to people and for all ages the interplay between the resources of medicine and sociology is demanded. The call for rehabilitation is being nurtured everywhere. We are on the threshold of what may be called secondary prevention in contrast with the primary prevention which has been our principal weapon to date, the attack on the degenerative and chronic diseases and on premature aging being related to this particular observation. The researchers are handing out package after package of data from which one must sort that which is personal responsibility and that which is public. The teaching of the public in either case falls in large part into the lap of the public servant. The advantages taken by commercialism must be assessed and appropriately taken care of. Shift in the principal causes of death, relatively or absolutely, accidents as an example, throws emphasis on new areas.

From this one gathers the premises and the challenges which call for changing responsibility of the health officer. Coupled therewith is the urge to fill in the gaps and inadequacies of the older services, and to salvage precious time and staff skill for new venture.

Gaps and Inadequacies in the Established Services

What are some of the gaps and inadequacies apparent here and there? One can think of better babies and fewer prematures, incidentally lower hospital costs and improved survival risks, as a demonstrated value of better prenatal care; of optimal use of medical and nursing time in well-baby supervision; a more effective preschool program; a more general acceptance of a school readiness program; more economical use of the time given to schools; more extensions of school health services into our secondary schools with full appreciation of the changed motivations; a full immunization program; an improved approach to our colossal frustrating dental problem by attack on the preschool phase, coupled with acceptance of fluoridation. These are by no means all of the gaps and as for future preventive measures, one has little difficulty in sensing many of the untilled or partly tilled issues in public health related to the general question: Where do we go from here?

In looking at gaps or new services, we see a vexing problem in administration, namely, the problem of procurement, affecting nursing in the main and giving threat in other areas. I am sure I have not the whole answer. Until we can bring more people into our ranks by job attraction and by remuneration that

will stand up to competition in other chosen fields, we have no adequate solution. Not until we reach some agreed-upon and honoured levels of remuneration and see an end to the baiting with certain "extras" which are little more than salary-subsidization will we have reached a reasonable working base. Pending this we are left with one operation, that of job analysis with a study of the priority to be accorded old or new venture, something always necessary in the interests of basic economy but hardly qualifying to meet the keen competition of one municipality with another for staff.

Another problem is presented by the arrival of sizeable blocks of New Canadians who bring with them the inability to speak English as well as the custom and culture of their native lands. The need to assimilate them and to care for their young is not deferrable. Our public authorities make haste to place these people and to set up opportunity for acquisition of our language. Elders, mothers in particular who are in the key family position, lag the most. For some we find it necessary to prepare our educational material in their native tongues. All possible means of communication have to be improvised as quickly as possible. Special centres of meeting and service are not to be casually dismissed. One other thing to be kept in mind is that there are contained in some of the customs and culture of these people practices and foods which match ours, so that what one shall do or undo demands assessment, during the assimilating period at any rate. So much for this issue; it does bear on changing responsibility.

Partly-Tilled and Untilled Areas

What are some of the untilled or partly tilled areas of public health relating to our altering responsibility? Mental health is on everyone's lips. Time has passed when we may content ourselves with the basic program of sensing and assessing mental retardation in which one reconciles it with the regular teaching program or provides for it special classes and schools, and of dealing appropriately with the more obvious problems of disturbed behaviour in our school children. We now look at the grim spectre of a hospital accommodation in which mental diseases hold too high a proportion, quoted in some areas at 50 per cent. We look at the rampant emotional disturbance on all sides. True, perhaps very little is known of effective measures in the prevention of the genuine psychoses as we see these in our institutions but surely the vulnerability to lesser forms of mental disease can be favourably influenced. It would seem that during the prenatal period and in early infancy one might hope to build into groups of families considerable of protective guidance of the anticipatory kind as a guard against many of the common everyday sources of intrafamilial emotional disturbances that are widespread within the community.

Properly instructed and orientated, the public health nurse in the course of her daily routine can aid the expectant and postnatal mother in the problems she will face in the new child—jealousy, frustration and loss of the centre of the stage as others arrive. Parents more generally should be given the simple remedies for tantrums, bed-wetting and the like. Many mental vaccinations can be administered by the nurse in her many contacts with families and

children. Into the schools the same need projects itself and here one can bid for the watchfulness and resourcefulness of a large and intelligent school staff. Similar opportunities present themselves in industry and commerce. Likewise there must come study of the mental aspects of physical disability and of social isolation in the aged, often part of senile degeneration.

In this ambitious program the health officer must be a vital part. An early profitable program of mental health might well be the training and orientation of the legion of health and welfare workers, the teachers, pastors, counsellors and others who are engaged in the service life of the community. Organized parent education is another objective. If one did little more than this for a time and did it well, much would be accomplished as the mental health experts refine and give growth to their techniques and develop the required facilities.

In the field of industrial hygiene many of us are quite fortunate in having in some form a division of industrial hygiene at provincial level which has assumed a high degree of activity in its own right and as consultant and evaluator in many of the conditions of occupational hazard which otherwise would devolve in no uncertain terms upon local authority in this era of industrial expansion with its technological complexities. This is not to say that local responsibility is clear of burden, quite the reverse. In Ontario, for example, the local health authority is co-administrator with the provincial factory inspector under the Factories, Shops and Office Buildings Act, visits premises under dictum of the Public Health Act and acts as primary scout for many of the conditions which may find their way to other levels for adjudication and action.

Closely related with this is air pollution to which industry contributes in no small amount in the nature of smoke, gaseous emission and odour. There are, of course, other sources—large buildings and apartments, particularly those containing incineration units, municipal destructors, asphalt plants and dumps, the railroads and the petrol-driven vehicle. Here again, one finds more often than not that air pollution control is entrusted to an authority outside the health department. It behooves the health officer to give all possible assistance, to speak strongly when so moved and to keep closely in touch with the morbidity and mortality evidence as this becomes authentically available. Air pollution control demands team work and is an area in which the health officers of many regions can make a substantial contribution.

Another field, poorly tilled if not untilled, is health education. We cannot say it is wholly untilled if we accept every contact in our daily work as an opportunity for teaching, that is, further, if we utilize the opportunity as we should. Do we do this?

We have many outlets for publicity if we will mobilize and cultivate them—television, radio-drama, the public press, news release, bulletins, pamphlets and publications by federal, state and local departments and by health agencies at various levels. No health department exists that is not teeming with stories of public interest if only it will use them as health information and health education material.

The sub-area in which we are probably the weakest at the moment is the

one of adult education. In some of our larger industries we may find much that can be classed as adult education. By and large, however, we see about us large numbers of careful parents who have accepted every measure for the protection of their children and we note their amazing lack of intelligent interest in relation to their own health. In other words, there is lamentable lack of knowledge concerning routine examinations, the early signs of abnormalities, diet, the values of peace of mind, sleep, exercise, recreation, cultural and social diversion in relation to healthful adulthood. The issue is challenging and worthy of improved tilling.

A component part of the foregoing is the area of nutrition at all ages, particularly in adulthood with its excesses and imbalances according to age and body constitution. Quite generally, too, we have reached the stage where we need to assess the fund of knowledge which has been handed out, the over-emphases which may characterize it, the residual shortcomings and most importantly, as was implied in part some minutes back, the advantages and interpretation which commercialism and the faddist have taken of or placed upon it. All this is a changing and growing responsibility.

There are several more questions that might be briefly referred to, matters in fact in which the health officer is being newly or more deeply involved, directly or remotely. Housing in terms of restoration, rehabilitation, prevention of blight or of slums if allowed to go so far, bears the implications of potential improvement of the assessor's roll, lower cost of public services, and above all an improved standard of living with its dividends in better physical and mental health. I cannot overlook a statement by the late Dr. C.-E. A. Winslow: "A sense of inferiority due to living in a substandard home may often be more serious than any insanitary condition associated with housing." Another: "The performance of household tasks with a minimum of effort, the provision of adequate facilities for privacy and . . . for social aggregation are vitally essential to emotional health." These are the considerations which are motivating drives on better housing and provision of low-rent housing. In Toronto, the health authority has not been drawn actively into the aspect of overall planning; he has, however, been drafted into some of the recent appraisals, one of which had considerable publicity not so long ago. We are aware, however, that a number of health officers have had to face the outcomes of inaccurate subdivision planning in having to cope with subsequent nuisances arising therefrom—a mistiming of attention and action in other words. As our growth continues it seemingly is the obligation of the health officer to find his way as best he can into the planning for housing at the proper junctures.

One might give a moment to medical care, the indigent portion of which is often the responsibility of the health authority except as it is otherwise provided for. This function is being reduced as new contracts are made with organized medicine on behalf of the public assistance groups. The low income group stays pretty much where it has been. Present connotation is rather one of desire for greater equality of medical care for all, and so presents a different perspective. The presence of medical care in the deliberations of our professional public health associations is quite in order, though what shall come

to the administrative desk of public health in the event of health insurance is not to be taken for granted and is not too clear. In the fields of chronic disease and of aging, some of us may be indulging in screening programs in furtherance of the concept of secondary prevention. This is legitimate so long as we do not sidetrack the need for resolution of the differing thought of two schools, one of which would include considerable of medical care in the public program, the other desirous of little more than screening to point up need to be referred to other resources.

I close on one note, namely, that an ounce of prevention is worth a pound of cure. Prevention by direct action and by encouragement of that which is the prerogative of others, curative medicine included, belongs to the health officer as always. His changing responsibility within such a framework will be fully challenged in this up-and-coming age.

PUBLIC HEALTH EDUCATION

Little can be accomplished in preventive medical service without the intelligent co-operation of the family. The physician rendering such service is therefore primarily a health educator. Although health education in the mass has been adopted by schools, health departments and industries, individual and family instruction is the most effective approach. Every health examination from the prenatal period to old age should be a session in health education, with simple explanation of the reasons for various tests, favorable comment on normal findings and instruction on how deviations from the normal can be overcome or held in check. Such procedures are paramount in winning the confidence of the individual and family in the skill and personal interest of the physician.—Henry E. Meleney, M.D.

Paralytic Poliomyelitis Incidence as a Guide to Vaccination

E. H. LOSSING, M.D., M.P.H.[1]

AT the beginning of the Canadian poliomyelitis immunization program in April 1955, the early primary school-age group was selected for vaccination by the majority of provinces. As the programs developed, vaccinations were progressively extended to include pre-school and older school-age children. By the beginning of the poliomyelitis "season" of 1958 it is estimated that in excess of 4,000,000 children will have been vaccinated. With the exception of pregnant women and certain occupational groups considered to be at special risk, few vaccinations will have been given to persons over 20 years of age.

This pattern evolved because with limited supplies of vaccine in the early stages of the program it seemed only logical that priority be given to the most vulnerable ages. The soundness of the decision to vaccinate first the early school ages and to extend vaccinations progressively to pre-school and older school ages will be seen from Tables 1 and 2. It will be noted that the largest proportion of all paralytic cases in each of the pre-vaccination years except 1953, and the highest paralytic attack rates in each year from 1952 to 1954,

TABLE I—PARALYTIC POLIOMYELITIS

Percentage Distribution by Selected Age Groups, 1952–1956, Canada*

Age Groups	1952		1953		1954		1955		1956	
	Cases	% Dist.	Cases	% Dist.	Cases	% Dist.	Cases	% Dist.	Cases	% Dist.
Under 1	67	4.4	116	3.3	12	4.6	4	1.2	3	1.5
1	33	2.1	159	4.5	19	7.7	15	4.7	21	10.3
2	58	3.8	212	6.0	30	12.9	24	7.5	20	9.8
3	74	4.8	236	6.7	28	12.4	23	7.2	25	12.3
4	62	4.0	216	6.1	18	8.2	17	5.3	14	6.9
0–4	294	19.2	939	26.1	107	22.7	83	25.8	83	40.9
5–9	372	24.3	831	23.7	122	25.8	54	16.8	33	16.2
10–14	232	15.1	399	11.4	52	11.0	41	12.8	21	10.3
15–19	169	11.0	249	7.1	46	9.7	29	9.0	10	4.9
20–24	140	9.1	293	8.3	37	7.8	33	10.3	18	8.9
25–29	130	8.5	324	9.2	39	8.3	30	9.3	16	7.9
30–34	118	7.7	243	6.9	21	4.4	28	8.7	10	4.9
35–39	41	2.7	121	3.4	24	5.1	16	5.0	11	5.4
40 & Over	37	2.4	111	3.2	24	5.1	7	2.2	1	0.5
All Ages	1,533	100.0	3,510	100.0	472	100.0	321	100.0	203	100.0

*8 Provinces Only.

[1]Chief, Epidemiology Division, Department of National Health and Welfare, Ottawa, Canada.

TABLE 2—Paralytic Poliomyelitis
Rates per 100,000 Population by Selected Age Groups, 1952–1956, Canada*

Age Groups	1952	1953	1954	1955	1956
Under 1	28.7	46.2	4.6	1.5	1.1
1	15.1	67.9	7.7	5.7	8.0
2	26.8	95.9	12.9	9.5	7.9
3	34.7	108.1	12.4	9.9	10.7
4	28.3	100.2	8.2	7.5	6.2
0–4	26.7	82.3	9.0	6.7	6.4
5–9	41.8	88.7	12.4	5.3	3.0
10–14	32.3	53.2	6.6	5.0	2.4
15–19	25.8	37.6	6.8	4.2	1.4
20–24	20.7	43.2	5.4	4.8	2.6
25–29	17.7	43.9	5.2	4.0	2.1
30–34	17.0	34.5	2.9	3.8	1.3
35–39	6.1	17.7	3.4	2.3	1.5
40 & Over	1.2	3.5	0.7	0.2	0.0
All Ages	16.5	37.0	4.8	3.2	1.9

*8 Provinces Only.

were to be found in the 5–9 age group, followed by the pre-school ages and older school-age children.

With increasing availability of vaccine it is important to consider the future course of vaccination programs. It is of interest to look to our Canadian experience over the past few years for any guidance that incidence patterns may offer. With the co-operation and assistance of Provincial Communicable Disease Control Directors and Epidemiologists, incidence figures of paralytic poliomyelitis by age for 1952 and subsequent years have been assembled for this purpose.

Age Distribution of Cases:

An examination of the percentage distribution of paralytic poliomyelitis by 5-year age groups is helpful (Table 1). It will be seen that the age distribution pattern in the pre-vaccination years 1952–54 and post-vaccination years 1955–56 is generally similar except that the peak of maximum distribution previously noted in the age group 5–9 has been displaced. In both 1955 and 1956, the maximum distribution of paralytic cases occurred in the 0–4 age group, and declined progressively through successive age groups except for ages 15–19 where in both years the distribution was low. It will be noted that in the years 1955 and 1956, 36 and 28% respectively, of all paralytic cases occurred at the age of 20 and over, and 16 and 11% occurred in those of 30 years of age and over. In the same years 7 and 6% of all paralytic cases occurred at 35 years and over.

Paralytic Attack Rates:

A consideration of age specific paralytic attack rates (Table 2) shows that the risk of paralytic poliomyelitis was greatest in the 5–9 age group in pre-vaccination years, but since 1955 the highest rates are to be found in ages 0–4. From this peak in the pre-school years there is a progressive decline with age, although the rate of decline is not large. In each post-vaccination year the attack rate at ages 35–39 was approximately half that at ages 5–9 years.

Paralytic Poliomyelitis in Pre-School Ages:

Since incidence rates and the proportion of paralytic cases occurring in the 0–4 age group are particularly high, it is of interest to examine each year of the pre-school ages separately. It is seen that the picture is much different in infants under one year of age than in any other early year of age. (Tables 1 and 2). Paralytic cases under one year of age contributed only 1.5% of all paralytic cases in 1956 and the risk of paralytic poliomyelitis in infancy as measured by case rates is relatively small, although it will be shown that case fatality rates in infancy are high. It should be noted, however, that with the exception of infants under one year of age, paralytic attack rates in 1955 and 1956 have been higher in each individual year under 5 years of age than in any of the older age groups.

Although poliomyelitis in infants is reported as "under one year of age" and not by the exact month of age, figures that are available, although incomplete, indicate that paralytic poliomyelitis occurring under six months of age is comparatively infrequent. This can probably be attributed to protection given by passively transmitted maternal antibodies since Brown and Smith (1) have shown that when high titres of antibody were present in the maternal blood, passively transmitted antibodies were demonstrated in the infant for 2 to 3 months. These authors have also indicated that vaccination commenced in young infants gives as satisfactory an antigenic response as vaccination in pre-school and school-age children.

Case Fatality Rates:

Although the incidence of paralytic poliomyelitis has been shown to decline with age, the risk of death in those developing paralytic poliomyelitis after infancy, increases with age as is demonstrated in Table 3. In 1952 and 1953 a similarity in case fatality patterns will be noted. The risk of dying from a paralytic attack was high in the very young, lower in the pre-school ages and increased rapidly through the school and adult ages. In the year 1954 the rise in fatality with age is not evident until the early adult ages, but from the age of 25 it increases with age as in 1952 and 1953. The case fatality pattern

TABLE 3—PARALYTIC POLIOMYELITIS

Case Fatality Rates (Deaths per 1,000 Cases) by Selected Age Groups, 1952–1955, Canada*

Age Groups	1952	1953	1954	1955	Average 1952–55
Under 1	149.2	94.8	83.3	—	110.5
1–4	101.3	34.0	94.7	38.0	51.4
5–9	112.9	43.3	82.0	55.5	66.0
10–14	129.3	77.7	76.9	48.8	92.5
15–19	106.5	104.4	21.7	34.5	93.3
20–24	192.8	197.9	54.0	121.2	180.9
25–29	192.3	160.5	128.2	33.3	158.7
30–34	194.9	164.6	142.8	71.4	165.8
35–39	268.3	289.2	250.0	61.9	262.4
40 & Over	297.3	207.2	333.3	285.7	245.8
All Ages	143.5	96.9	103.8	59.2	111.4

— Deaths nil.
*8 Provinces Only.

in 1955 is unstable due to the small number of cases and deaths experienced in that year. At the time of writing (April 1957) deaths by age are not available for the year 1956. It will be seen, however, from the case fatality averages for the years 1952–55, that the risk of death in those developing paralytic poliomyelitis at ages 35–39 is about 2½ times the risk under one year of age and about 5 times the risk in the pre-school ages.

Deaths from Poliomyelitis:

The pattern of death rates per 100,000 population for individual years 1952 to 1955 and the averages for these four years are illustrated in Table 4. In the 4-year averages the rise in death rates seen in the school ages is followed by a

TABLE 4—POLIOMYELITIS DEATHS

Rates per 100,000 Population by Specified Age Groups, 1952–1955, Canada*

Age Groups	1952	1953	1954	1955	Average 1952–55
0–4	3.0	3.4	0.8	0.2	1.8
5–9	4.7	3.8	1.0	0.3	2.4
10–14	4.2	4.1	0.5	0.2	2.2
15–19	2.7	3.9	0.1	0.1	1.7
20–24	4.0	8.5	0.3	0.6	3.3
25–29	3.4	7.0	0.7	0.1	2.8
30–34	3.3	5.7	0.4	0.3	2.4
35–39	1.6	5.1	0.8	0.1	1.9
40–44	0.8	2.3	0.5	0.3	1.0
All Ages	2.4	3.6	0.5	0.2	1.6

*8 Provinces Only.

decline at ages 15–19. A rise to a maximum rate at ages 20–24 then occurs with death rates thereafter tending to decline gradually with age. It should be noted, however, that the death rate at ages 30–34 years is as high as it is in the early school years, while even at ages 35–39 the death rate in some years was higher than in ages 15–19.

The percentage distribution of deaths by 5-year age groups (Table 5) shows that the distribution in each 5-year age group up to 34 years of age,

TABLE 5—POLIOMYELITIS DEATHS

Percentage Distribution by Specified Age Groups, 1952–1955, Canada*

Age Groups	1952	1953	1954	1955	Average 1952–55
0–4	15.0	11.5	20.4	15.8	13.5
5–9	19.1	10.6	20.4	15.8	14.5
10–14	13.6	9.1	8.2	10.5	10.7
15–19	8.2	7.6	2.0	5.3	7.3
20–24	12.3	17.0	4.1	21.0	14.5
25–29	11.4	15.3	10.2	5.3	13.2
30–34	10.4	11.8	6.1	10.5	10.8
35–39	5.0	10.3	12.2	5.3	8.4
40–44	2.3	4.1	6.1	10.5	3.8
45 & Over	2.7	2.7	10.2	—	3.3
All Ages	100.0	100.0	100.0	100.0	100.0

— Deaths nil.
*8 Provinces Only.

and even to age 39 in some years, is essentially the same except for the age group 15–19 years in which the proportion of deaths is low. In the 5-year averages slightly over 25% of all deaths occurred in ages 30 and over, and 15% in ages 35 and over. Only 7% of deaths occur in the 40 and over group.

Summary

Age distribution patterns of paralytic cases and poliomyelitis deaths in the past few years have been examined to determine the guidance that our experience with poliomyelitis may offer to continuing vaccination programs in Canada. It is shown that in the post-vaccination years 1955 and 1956 the largest proportion of all paralytic cases had shifted to the pre-school ages. Between 28 and 36% of all cases occurred in ages 20 and over, and 11 to 16% at ages 30 and over. It is to be noted that approximately the same proportion of all cases occurred at ages 30–34 as in ages 15–19 in these two years. Since vaccinations commenced, the risk of developing paralytic poliomyelitis as measured by attack rates per 100,000 population is shown to be greatest in the pre-school years, and in general to decline gradually with age. It is of interest, however, to note that in the year 1956 the risk of paralytic poliomyelitis at ages 30 to 39 years was as high as in the high school ages (15–19 years). High attack rates at each individual year of age under 5, with the exception of infants under one year, are shown. An examination of case fatality rates indicates that paralytic poliomyelitis is particularly lethal in the very young and after a regression in childhood becomes increasingly deadly during the adult years. Under the age of one year, an average of 11% of paralytic poliomyelitis cases died. Mortality was 5% in the pre-school child, 6 to 9% in the school ages, approximately doubled during young adult years, and reached a peak of 25% in persons 35 and over. It is shown that death rates and the distribution of deaths remained reasonably constant through all ages up to 34, except for a deficiency at ages 15–19 years. Over half of all deaths occur in persons 20 years and over, some 25% over the age of 30, but only 7% in the 40 and over group.

Conclusions

Several factors indicate clearly the need for commencing vaccinations at an early age. Among these are the high case fatality rates in the very young, the large proportion of all paralytic cases occurring in the pre-school ages as a group, and the high attack rates seen in each individual year of age from one to four. Since it appears that antigenic response is satisfactory in the young infant, vaccination commencing as early as three months of age is desirable.

The observation that one-third of all paralytic cases and over one-half of all poliomyelitis deaths occur in persons over 20 years of age, combined with the persistence of comparatively high case and death rates and the increasing case fatality rates in the older adult ages suggest the need for adult vaccination. It would appear that vaccination of adults, particularly the parents of pre-school and school-age children, would be desirable up to 40 years of age.

1. Brown, G. C. and Smith, D. C.: J. Am. Med. Assoc., 1956, *161*: 399.

Where Are We Going with Dental Health Programs?[1]

H. K. BROWN, D.D.S.[2]

THE purpose of this presentation is to make a cursory appraisal of dental programs as they exist today across Canada and to comment briefly on their origin and the circumstances relating to their development. Then I shall take the liberty—and the risk—of speculating in the light of social pressures and recent scientific developments, on what trends may be taken by oral health programs of the not-very-distant future.

Dental programs having anything of a preventive nature in their design and aimed at large group-coverage are new in this country. Before World War II most large urban municipalities were providing limited dental treatment services to elementary school children and to certain adult welfare recipients. All or most of the provincial departments of health were doing the same sort of thing to a limited extent in rural areas. In some rural districts not served by dentists, certain voluntary health and welfare agencies working in collaboration with local dental societies assisted in providing limited services for children.

With the advent of World War II came the discovery of appalling oral health conditions among recruits for military service. By June 1940, when recruiting really began in earnest, so many otherwise acceptable applicants were being rejected because of decayed or lost teeth or diseased gums that it became necessary to suspend the very low dental requirements for enlistment in the hope that the recruit could be dentally rehabilitated by the Dental Corps. The discovery of the oral conditions of people going into the armed services and the problem of dealing with those conditions during and immediately after the war had a profound effect on the thinking of the dental profession and upon that of public health agencies all over the continent. A change also occurred in the viewpoint of hundreds of thousands of people who received dental care in connection with their military service. The outcome was a considerable upsurge of interest in dental care. This was reflected in dental surveys of school children, the admission of dentists to schools of public health, the appropriation of funds for dental research and the creation of dental health units in some provincial departments of health and the expansion of child dental programs in many urban municipalities.

Development of Dental Care Programs

The greatest impetus to the development of dental care programs aimed at the prevention and control of oral diseases and disability was provided by the advent of the National Health Grants in 1948. With the aid of funds provided from the General Public Health Grant child dental care programs have been instituted in all ten provinces. Important long-term research into the causes of malocclusion is being conducted with aid from the Crippled Children's

[1]Presented at the forty-fifth annual meeting, Canadian Public Health Association, Toronto, Ontario, May 27–29, 1957.

[2]Dental Consultant, Department of National Health and Welfare, Ottawa, Ontario.

Grant. Facilities for the dental care of institutionalized adults and children have been provided through funds from the Mental Health Grant and the Tuberculosis Grant. Also the National Research Council has been making funds available in increasing amounts for the encouragement and support of dental research and for the training of research workers in basic medical science fields related to dentistry.

Commendable progress has been made. Large sections of the population have been alerted to the need to preserve the dental health of their children. Public pressure for dental treatment for both children and adults far exceeds the capacity of the dental profession to provide it. The need is stupendous. Even where the best dental programs are operating, cavities are occurring in children's teeth six to ten times faster than the dentists can fill them and there are many large population groups not served by any dentist.

During the last few years the Dental Health Division of The Department of National Health and Welfare has examined the mouths of about 60,000 children and recorded their oral conditions. What has been seen can be described as something resembling an avalanche of decayed teeth, jaw abscesses with fistulas discharging pus into the mouth and abnormalities of growth and development from the premature loss of teeth. By the time they reach Grade VIII, ninety-nine percent of the children have tooth decay, and a great deal of it, unless they happen to be living in an area where the water contains fluoride. Seven to ten per cent have a more or less serious degree of malocclusion. Most of them have gingivitis and unclean mouths. While tooth decay is the beginning and is basic to all oral ill health and disability it is not the whole story. Periodontal disease which has its beginning in the gingivitis of children causes the loss of more teeth after the age of thirty years than does tooth decay. Even if we were to direct all the treatment work of Canada's 5,000 dentists to the care of the elementary school children alone they could not handle more than half the backlog of oral disease and abnormalities in that group. Even in those communities where fluoridated water has reduced the prevalence of tooth decay by two-thirds the balance of one-third which is left, along with the other oral conditions requiring treatment, is still more than the dental profession can cope with. The same situation would prevail throughout the entire country if by fluoridation or some other means the total tooth decay prevalence could be reduced to one-third of its present level.

Prevention of Tooth Decay and Periodontal Disease

The fundamental answer to the overwhelming oral disease and disability problem does not lie in the provision of treatment alone. In the near future, dental treatment will come to be regarded as a measure of the degree to which public health has been successful in solving the oral health problem. The successful dental programs will be those in which the least treatment will be required to preserve oral health and function. Nearly all tooth decay and periodontal disease is preventable. It has been shown repeatedly that cleansing the mouth immediately after eating will reduce the incidence of tooth decay by more than fifty per cent even in the presence of the average cariogenic diet and will prevent almost all gingivitis, in which periodontal disease has its beginning. It has also been shown that a reduction in the frequency of

eating sweets, especially the sticky kinds and between meals, has a highly important bearing on reducing tooth decay. This is public health knowledge urgently in need of dissemination among the people in a manner that will lead them into its use in their pattern of living. Nowhere else in the field of public health does prevention depend so much on what the individual can be induced to do for himself and to continue to do for himself as in the prevention of tooth decay and periodontal disease. Only he can clean his own teeth, and only he can decide generally what he is going to eat and when he is going to eat it. In short, he, and only he, can make and act on the decisions which will determine to what degree he will experience oral disease and disability. This is a challenge not only to the public health dentist, the dental hygienist and the public health educator, it is a challenge to the whole public health team.

It is the experience of those who do extensive dental survey work to find little groups of people with clean, disease-free mouths standing out like islands in a sea of oral uncleanliness and disease. Sometimes it is one class-room in an otherwise orally infected school. Sometimes it is one or more schools in a city. Somebody, somewhere, has stimulated group interest and group action and obtained results. How was it done? Those little islands of good oral health are not infrequent in their occurrence. Perhaps they offer to the health educator and the public health dentist a challenge to collaborate in research into the special set of circumstances that gave rise to them.

It has also been discovered and demonstrated that a community can reduce the attack rate of tooth decay by two-thirds even in the presence of the causative factors by the simple expedient of raising the fluoride content of the water supply to one part per million. This is about six times as effective as the treatment now provided even in the communities that are best supplied with dentists. The average cost of one filling will fluoridate water for an individual for about fifty years. Expressing it another way, fluoridation will prevent for ten cents, as much tooth decay as it would cost five dollars to have treated—if there were dentists available to treat it!

The present situation in relation to preventions may be summed up by saying that research during the past ten years has revealed practical methods whereby the individual by his own efforts and with the assistance of his community through water fluoridation can almost eliminate tooth decay and periodontal disease. There are, in addition, other preventive measures which depend upon the services of dentists or dental hygienists. These include the applications of fluoride solutions to the surfaces of the teeth. However, let us not be so utopian as to believe that everybody will use these preventive measures even if they are available and everyone knows about them. There will always be plenty of tooth decay, periodontal disease and malocclusion to treat. Treatment will always be an essential part of dental programs, even when not designed to relieve either individuals or communities of their responsibility to institute preventive measures. Its purpose ideally will be to handle completely and systematically that fraction of oral disease and disability which cannot be prevented.

Evaluation of Programs and Developments

Let us plan oral health programs in the light of what is presently known

about prevention and treatment, place the various elements of the program in what appears to be a logical order and prepare to use the measuring rod to find out whether or not useful results are being economically produced.

During the past few years good practical evaluation procedures have been set up. They are being effectively used in some parts of Canada at present. Their development and application is of great assistance both in determining local needs and evaluating the measures adopted to meet them.

There is another reason for developing, using and sharpening the dental survey and program evaluation tools. Certain dental care programs for both children and adults which are in the course of development in the United States will almost certainly be adopted with some modifications in parts of this country. There are now in experimental operation there several pilot model voluntary dental health insurance schemes, set up through the collaboration of industrial groups and dental societies. These are the product of certain social pressures that have their counterparts in this country. Therefore, we may reasonably expect developments of a similar nature here. Whatever form they take will require detailed information covering the oral conditions and treatment requirements of the population groups involved.

Evaluation procedures will soon be needed to assess the value of a number of new dental developments which are on the way. There are good reasons to believe that in the provision of dental care in the near future the dental profession and its auxiliaries will use, in addition to some of the preventive measures presently available, certain others that are now in the laboratory stage of development. There are several promising ones now under investigation. Some day we may even have a dentifrice so effective that the advertisers may make their claims with a clear conscience.

Among the most impressive scientific developments now taking place in the dental field are those related to the nature of equipment used to prepare teeth for fillings and other types of dental restoration. Equipment of a revolutionary design will be in use in the near future. Some of its forerunners are now in use in some dental offices. Advanced or final stages of its development will probably be reached within the next three to five years. There appears to be little or no doubt that it will soon be possible to cut the hardest tooth substance and prepare teeth for dental restorations almost silently, with great rapidity, and with much greater comfort to the patient than is possible with present-day instruments.

The development of this equipment has some rather broad implications bearing on the training of the dentist, the training and use of dental auxiliaries and the organization of dental practice. It promises to increase the capacity of the dentist to render treatment, and to facilitate greatly the treatment of children. Its effect on organized child dental care programs can be awaited with interest.

The foregoing is designed to suggest that neither the private practice of dentistry nor the operation of organized dental health programs is likely to become static as long as the public demand and the public need stimulate dental research to bring forth new and more effective methods of preventing and controlling oral diseases and disabilities, and as long as sound evaluation methods are used to test and integrate the measures made available.

Postgraduate Teaching in Public Health in the University of Toronto, 1913-1955

R. D. DEFRIES,[1] C.B.E., M.D., D.P.H., LL.D.(Sask.)

INSTRUCTION in sanitary science was first given in the Toronto School of Medicine in 1875 by Dr. William Oldwright, a family physician. In 1887, the School became the faculty of medicine in the University of Toronto and in 1903 was amalgamated with the medical faculty of Trinity University constituting the Faculty of Medicine of the University of Toronto. The present medical building on the University of Toronto campus was opened in that year accommodating all departments of the new faculty. In 1910, Dr. Oldwright retired and Dr. John A. Amyot, Director of the Provincial Board of Health Laboratory, was appointed Professor of Hygiene (part-time).

The decision to provide postgraduate training in public health had been made several years previously and the requirements for the Diploma in Public Health appeared in the Calendar for 1906 of the Faculty of Medicine. It was not until 1912, however, that the first application was received and the course was commenced. In this connection, it is desirable to recall the status of public health at that time. In that year, public health services in Ontario were reorganized by Dr. John W. S. McCullough who had recently been appointed Provincial Health Officer and who brought to that position a rich experience in general practice. Part of his plan was the improvement of health services at the local level and, to this end, he appointed full-time district health officers, dividing Ontario into seven districts. The central organization of the provincial board of health consisted, primarily, of the divisions of sanitary engineering, laboratory services and communicable disease control.

Dr. Amyot's plans for postgraduate teaching in public health were warmly supported by Dr. McCullough. Without this co-operation the University of Toronto would not have had the services of Dr. Amyot as Professor of Hygiene and Dr. Amyot would not have been able to provide training for candidates for the Diploma in Public Health, without the assistance of members of the staff of the Provincial Department of Health. In 1914, public health training was provided for graduates in engineering and throughout the years, in co-operation with the Faculty of Applied Science and Engineering, postgraduate instruction in public health has been provided.

Following the establishing of the laboratories in the Department of Hygiene in the University by Dr. J. G. FitzGerald in 1914, which are now the Connaught Medical Research Laboratories, Dr. McCullough gave hearty support to a plan advanced by Dr. FitzGerald to prepare and distribute without charge to

[1]Director-Emeritus and Consultant, Connaught Medical Research Laboratories, University of Toronto, Toronto, Ontario.

physicians in Ontario diphtheria anti-toxin and other essential serums and vaccines. From their inception, the Connaught Laboratories and the School of Hygiene have been intimately related to the Department of Health of Ontario.

Close association was established, also, with the Department of Health of the City of Toronto, permitting of observational visits to its various departments and instruction by senior staff members. Dr. C. J. O. Hastings, Medical Health Officer of Toronto, 1910–1929, gave valued support in this way to the development of postgraduate training in public health. It is pleasing that a memorial fellowship was established by his friends in 1936 in the School of Hygiene.

The first course was given in the session of 1912–1913 and the circumstances relating to its commencement are of interest. In 1911, the University of Western Ontario had applied to the Ontario Government for a grant to permit the establishing of an Institute of Public Health. Funds had been provided and construction of the building was proceeding. The new institute was designed to provide diagnostic services, to conduct research and it was expected, postgraduate teaching. The leader in this undertaking was Dr. Hibbert W. Hill, who will be remembered for his outstanding work in public health administration and in the study of the epidemiology of tuberculosis in Canada and the United States. The writer, as the first candidate for the Diploma in Public Health in the University of Toronto, remembers well the indecision of the Faculty of Medicine concerning the inauguration of the course. The candidate had planned, following a year of postgraduate study in biochemistry, to engage in public health work and in this he was greatly encouraged by Dr. Amyot. In view, however, of the establishing of the Public Health Institute in the University of Western Ontario, question was raised by the Medical Faculty as to the wisdom of providing a postgraduate course in public health. With the application before the Faculty and the urging of Dr. Amyot, approval was given and arrangements were at once made to commence the course. It is quite possible that the action taken at that time which laid the foundations of the present School of Hygiene would not have been taken, and postgraduate teaching in public health would have been established elsewhere, if an application for the course had not been received at that particular time. The facilities of the Department of Preventive Medicine were very limited, consisting of two rooms on the ground floor of the medical building and a museum of hygiene on the basement floor. This museum had been developed by Professor Oldwright, but unfortunately, it had deteriorated and consisted of a miscellaneous collection of old cardboard models, plumbing traps and outmoded sanitary devices. Changes soon followed and within two years, the museum was replaced by the new antitoxin laboratory under Dr. FitzGerald who had joined Dr. Amyot in 1913 as Associate Professor of Hygiene. Dr. FitzGerald participated in the second course of the Diploma in Public Health. The Antitoxin Laboratory functioned separately from the teaching laboratory in bacteriology and in 1917 the name was changed to Connaught Antitoxin Laboratories with the opening of the farm section through the gift of Col. Sir Albert Gooderham.

It is of interest to refer to the curriculum of the first course. The published curriculum was based on the courses provided in Great Britain. Major emphasis

was placed on sanitation and sanitary engineering, quarantine, ventilation and the clinical study of fevers. Other subjects were geology, microbiology, meteorology and surveying. In arranging for the candidate's time to be fully occupied, Dr. Amyot assigned him for one day each week to attend in the Department of the School of Applied Science and Engineering. This afforded the privilege of participating in a survey of the University grounds and included a course in hydraulics together with efforts to acquaint him with "engineering aspects of public health". It is not necessary to state that the candidate was a problem child to the departments of the Engineering School. Dr. Amyot was an ardent student of pathology and Roget's textbook constituted the basis of instruction in general pathology and immunology. An apprentice course in bacteriology was provided in the laboratories of the Provincial Department of Health where the candidate had material in abundance for study. At this time, advance pages of a textbook "Hygiene and Preventive Medicine" were sent to Dr. Amyot by Dr. M. J. Rosenau of Harvard University and were of very great interest. W. T. Sedgwick's "Principles of Sanitary Science and Public Health", was the textbook used in providing a systematic outline of public health but Dr. Amyot's discussions far outshone all other presentations. He was a great teacher and his approach to public health was eminently practical. His teaching was greatly appreciated by medical students and he left no doubt in their minds as to the Christian principles which governed his life. He stood resolutely for what he believed was true and was vigorous in exposing injustice but at the same time he was always humble and kindly. His name will be remembered for having laid the foundations of the School of Hygiene.

In the session 1913–1914, the second D.P.H. course was offered and Dr. John W. S. McCullough, Dr. A. Grant Fleming, and Dr. Fred Adams of the Department of Health, City of Toronto, enrolled and the first candidate was appointed to the teaching staff as demonstrator. Examinations were not held at the close of the first course, 1912–1913, owing to the participation of Dr. Amyot in the work of the International Joint Water Commission but were held in the spring of 1914.

The outbreak of World War I in August, 1914, did not disrupt the course. Dr. C. P. Brown, later Chief of the Division of Quarantine of the Department of National Health, and Dr. Rachel R. Todd entered the course in September 1915. Although Dr. Amyot enlisted for active service at the commencement of the war, Dr. FitzGerald conducted the course which was continued throughout the war years with the exception of 1918 when Dr. FitzGerald also proceeded overseas. The direction of the course was then assumed by Dr. Defries. Since 1919 the Diploma course has been provided every year. At the close of the war, Dr. Amyot was chosen as Deputy Minister of the newly created Department of National Health at Ottawa, Dr. FitzGerald was appointed Professor of Hygiene and Preventive Medicine and the first candidate received the rank of associate professor in the department.

Commencement of the School of Hygiene

What was the status of public health in Canada at the close of World War I thirty-six years ago? The great pandemic of influenza of 1918–1919

remains as the world's most devastating outbreak of disease in modern times. The occurrence of smallpox in Ontario, although in mild form, also served to emphasize the need for more effective local health services. These events brought a realization of the importance of health in a nation's economy and a Department of National Health for Canada was established for the administration of federal services and assistance to the provincial departments of health. The first full-time health unit to provide adequate local health services in rural and semi-rural areas was established at Saanich, a suburb of Victoria, British Columbia in 1920 using, in part, funds which had been raised to provide a war memorial. The building was appropriately named the Saanich War Memorial Health Centre. The growth of the movement for full-time health units in Canada was slow and it was not until 1928 that the next unit was established in the County of Beauce in the Province of Quebec followed by the Gravelbourg Health Unit in Southern Saskatchewan in 1929. As a result of the leadership of Dr. Alphonse Lessard, Director of Health for the Province, additional units were established in Quebec during the next few years.

At the close of the war, the course leading to the Diploma in Public Health and the course in sanitary engineering were recognized by the provincial departments of health as desirable preparation for those who wished to engage in public health work in Canada. In 1919, Dr. P. J. Moloney joined the staff of the Connaught Laboratories and commenced the teaching of public health chemistry in the Department of Hygiene and Preventive Medicine. In 1920, the late Dr. D. T. Fraser commenced his career of teaching being responsible for the instruction in bacteriology and immunology and Dr. Defries gave the instruction in epidemiology and biometrics. Thus the foundations were laid and the time was opportune for the establishing of a School of Hygiene.

In 1923, Dr. FitzGerald enjoyed a year of sabbatical leave engaging in teaching in the University of California. During this year, following the discovery of Insulin, the Connaught Laboratories undertook to prepare Insulin in large quantities for use in Canada. It was during this year that Colonel F. F. Russell came to Toronto, on behalf of the Rockefeller Foundation, to survey the possibility of establishing a School of Hygiene in Canada. Through the munificence of The Rockefeller Foundation, Schools of Hygiene had already been established in Harvard University; Johns Hopkins University; in London, England; and in several other centres in Europe. Colonel Russell's name is known to all students of bacteriology in connection with the typhoid-paratyphoid group of organisms. Dr. Defries, as Acting Director, reviewed with Colonel Russell the work of the Laboratories and of the teaching in Hygiene and Preventive Medicine as provided in that department in the Faculty of Medicine. It was appreciated that Toronto was a logical centre for the development of a School of Hygiene in view of the excellent city department of health which had been developed by Dr. C. J. O. Hastings and the Provincial Department of Health of Ontario which, under the leadership of Dr. J. W. S. McCullough, had attracted the attention of health leaders on this continent.

Of particular interest to Colonel Russell was the work of the Connaught Laboratories, including its research facilities and the intimate relationship of

postgraduate teaching made possible by Dr. FitzGerald serving as director of both the Laboratories and the projected School. On his return from California, Dr. FitzGerald continued the discussion of this subject with The Rockefeller Foundation and a formal proposal was presented and accepted by the Foundation in 1924.

It is of interest that from the commencement of postgraduate teaching in 1912 until 1927, when the School was opened, 49 physicians received the Diploma in Public Health and a number of graduates in civil engineering received the M.A.Sc. degree for postgraduate work in the Municipal and Highways option which included courses in sanitary engineering, bacteriology and public health.

Reference has been made to the development of public health nursing and it is of interest that through the Canadian Red Cross Society, support was originally provided for the establishing of a Department of Public Health Nursing in the University of Toronto in 1921 with Miss E. K. Russell as Director. By 1924 the resources of this Department proved entirely inadequate for the number of nursing students applying for the course, and, therefore, in the planning of a School of Hygiene, the needs of the Department of Public Health Nursing were included. Thus, the School of Hygiene as first planned provided for the Department of Hygiene and Preventive Medicine of the Faculty of Medicine, with its program of undergraduate and graduate teaching, and the Department of Public Health Nursing.

The planning of the new building included also facilities for research and support for this was provided in part by the Connaught Laboratories. It will be remembered that the Laboratories have had as their objective, the conduct of research, the preparation of essential products for treatment or prevention of disease and co-operation with the School of Hygiene in the training of those who are to provide the public health services of Canada. At this time the discovery of Insulin was a stimulus of first importance, for this discovery directed attention to medical research and inspired hope of what might be accomplished in other diseases.

In planning the School, $400,000 was provided for the erection of the building which would accommodate the School and also the section of the Connaught Laboratories on the University campus. It was realized that the cost of maintaining the School would be too heavy a burden for the School itself and the participation of the Connaught Laboratories would be essential in the successful operation of the undertaking. It was, however, not financial assistance primarily that the Laboratories contributed which was most important but the participation of senior members of the Laboratories as teaching members.

In the agreement with The Rockefeller Foundation, the Board of Governors of the University endorsed these relationships and approved of the erection of a building to accommodate the School and the Laboratories. The arrangements provided that $250,000 be set aside as an endowment to permit establishing two new departments, namely the Department of Epidemiology and Biometrics and the Department of Physiological Hygiene. Initially, therefore, the School consisted of the Department of Hygiene and Preventive Medicine, which was also a department of the Faculty of Medicine, the two new departments and

the Department of Public Health Nursing. There was continued the close relationship with the Connaught Laboratories which had existed from the inception of the Laboratories in 1914. The University's contribution in the establishing of the School of Hygiene was its Department of Hygiene and Preventive Medicine in the Faculty of Medicine which, by this arrangement, would also serve the School. It was understood that the University would maintain the portion of the building occupied by the School. To the income of the School was added a substantial annual contribution by the Connaught Laboratories for the conduct of research in the School.

On June 9, 1927, the School of Hygiene was formally opened by Sir George Newman, Chief Medical Officer of the Ministry of Health in Great Britain. To direct the new department of Physiological Hygiene Dr. C. H. Best, who had just returned from a year of studies in Europe, was appointed, and Dr. R. D. Defries was named Head of the Department of Epidemiology and Biometrics with Dr. N. E. McKinnon as Associate.

The growth of the School and of the Connaught Laboratories was rapid. In 1931 an addition was made to the south wing of the building by the Connaught Laboratories to provide enlarged facilities for the preparation of Insulin. To meet the needs of the School negotiations were commenced to provide another addition to the building which would provide approximately 80 per cent more space. The Rockefeller Foundation generously contributed an additional $600,000 to the endowment fund of the School, on the understanding that the new addition would be provided. It will be recalled that at that time a serious financial depression was being felt in Canada and on account of this, the Ontario Government agreed to a plan whereby the Connaught Laboratories advanced the necessary funds for the erection of the building and the Provincial Government agreed to provide annually, for the purposes of research, an amount equivalent to the interest which would have been earned on the funds invested in the building.

In 1931, Dr. FitzGerald was appointed a member of the Board of Scientific Directors of the International Health Division of the Rockefeller Foundation and also a member of the Health Committee of the health organization of the League of Nations. In the following year he was appointed Dean of the Faculty of Medicine in which position he served until 1936. In 1935, in company with Colonel Russell, Dr. FitzGerald visited India to report on medical colleges to the Rockefeller Foundation.

In 1937, Dr. FitzGerald was granted leave of absence to engage in a year's investigation of methods of teaching in preventive medicine in Europe and America in which he was accompanied by Dr. C. E. Smith now Dean of the School of Hygiene, University of California. While en route to Norway in June, 1938, he suffered a serious illness from which he failed to regain his strength. The outbreak of World War II caused him deep concern. In April, 1940, he was able to return to the Laboratories but shortly after he suffered a relapse and died on June 20. In his death the School of Hygiene suffered a most grievous loss and the whole cause of public health in Canada was deprived of one of its most outstanding leaders. He commenced his teaching in 1910 in the University of Toronto as lecturer in bacteriology. The following two years he spent at

the University of California and in 1913 returned to the University as Associate Professor of Hygiene. In this he brought a vision of not only what might be accomplished through research and the preparation and distribution of essential biological products but also the necessity for more adequate undergraduate instruction in preventive medicine and the importance of postgraduate courses. These desiderata were so closely related that the attainment of each has been dependent to a considerable extent on the successful attainment of the other. It was because of this fact that the Connaught Laboratories and the School of Hygiene have been intimately related throughout the years. The place of research in the development of the School was never lost sight of by Dr. FitzGerald. Evidence of this close relationship was the granting of fellowships in public health by the Connaught Laboratories to assist public health officers and other physicians to receive postgraduate training. In all, 52 fellowships were provided, supplementing the provision of fellowships by the Rockefeller Foundation. Two fellowships were established, also, by the Connaught Laboratories, one bearing the name of Dr. FitzGerald and the other the name of Sir Albert Gooderham who gave to the University the property and buildings which now constitute the Dufferin Division of the Laboratories.

The provision of fellowships in public health by the Rockefeller Foundation has been a contribution of the greatest importance in the development of public health in Canada as in many other countries. In 1940, a Canadian office was established for the representative of the International Health Division and Dr. W. A. McIntosh was appointed. The Canadian office was accommodated in the School of Hygiene. During the following ten years Dr. McIntosh conducted studies of public health administration on the request of provincial departments of health and his reports were of very great value. In 1950, he was appointed Regional Foundation Director for the Near East and was succeeded by Dr. D. Bruce Wilson who served until his retirement in 1953, at which time the Canadian office was discontinued. Throughout the years The Rockefeller Foundation has continued its interest in the School of Hygiene giving support to several projects. A development of major importance was the establishing in 1940 of a co-operative plan between the School of Hygiene and the municipality of East York, a suburb of Toronto. Through the support of the Foundation and the Department of Health of Ontario, the facilities of the East York health unit were placed at the disposal of the School and Dr. William Mosley, Medical Officer of Health, was appointed Associate Professor of Public Health Administration. This provided the opportunity for studies to be made by the Departments of the School and facilities were provided for special students to engage in field work. It is pleasing to record that under Dr. Mosley's direction this co-operative plan has been in continuous operation during the past 15 years, and it has been extended to include the adjacent municipality of Leaside.

With the appointment of Dr. C. H. Best, Head of the Department of Physiological Hygiene and Professor of Physiology to succeed the late Sir Frederick Banting as Director of the Banting and Best Department of Medical Research, Dr. D. Y. Solandt was appointed in 1941 as Acting Head, and later as Head, of the Department of Physiological Hygiene.

The School of Hygiene made important contributions to the war effort. Following the announcement of hostilities Dr. N. E. McKinnon and Dr. M. H. Brown, senior members, proceeded overseas with the armed forces and were joined later by Dr. D. L. MacLean. Dr. D. Y. Solandt was appointed to the R.C.N. Medical Research Division. Dr. Mosley served with the R.C.A.F. as medical officer. Dr. H. M. Barrett was engaged in Chemical Warfare studies under the Department of National Defence. These and other members of the staff served throughout the war. The absence of these senior members was severely felt by their colleagues in conducting the courses in the School.

In 1941, the Faculty of Medicine adopted an accelerated course opening late in August and closing in mid-April and the School of Hygiene followed the same schedule. The need for the courses in the School during the war years was soon evident as the armed services, requiring additional officers with training in public health, seconded members for training.

To provide adequately for the School three sub-departments were established in 1942, namely, Virus Studies with Dr. James Craigie as Head, Public Health Administration under Dr. Mosley, and Public Health Nutrition under Dr. E. W. McHenry.

In 1944, the need for additional courses in special fields of public health was recognized and new courses were announced leading to diplomas in Veterinary Public Health, Dental Public Health and a Certificate in Public Health for graduates in Arts and Sciences desiring qualifications in vital statistics, health education or sanitation. At this time Dr. McKinnon returned from overseas to direct the department of Epidemiology and Biometrics.

Following the close of the war the enrolment in the University rose in 1947–1948 to a peak figure of 17,723, almost double prewar figures. To accommodate members of the armed services on their return to civil life who desired post-graduate work in public health, a further acceleration of the course was undertaken and two complete courses were provided in 1945–1946. In the September course, 34 physicians were registered for the Diploma in Public Health, 2 dentists for the Diploma in Dental Public Health, 4 veterinarians for the Diploma in Veterinary Public Health and one physician for the Diploma in Industrial Hygiene. Three civil engineers proceeded to the M.A.Sc. degree. In the spring, 31 physicians enrolled in the Diploma in Public Health course.

In 1946, Dr. James Craigie resigned to accept a senior research appointment in Great Britain. Dr. C. E. van Rooyen was appointed to succeed Dr. Craigie as Professor of Virus Infections and Dr. D. L. MacLean, Professor of Public Health, became Secretary of the School. The sub-departments of Public Health Administration, Public Health Nutrition and Chemistry in Relation to Hygiene were constituted departments. At this time, also, the School of Hygiene was accredited by the American Public Health Association to provide post-graduate training in Public Health, being one of the original group of schools receiving accreditation.

The Department of Hospital Administration was established in the School of Hygiene in 1947 under the direction of Dr. Harvey Agnew. The establishing of this department was made possible by the W. K. Kellogg Foundation. The course leading to the Diploma in Hospital Administration was accredited by

the American Association of University Programs in Hospital Administration. By 1955, 79 students had completed the first year and 42 students had completed the second year's requirements and had received the Diploma in Hospital Administration. An extension course in Hospital Organization and Management was inaugurated in 1952 by the Canadian Hospital Association and the Department of Hospital Administration.

The growth of the School of Hygiene continued in the post-war years. In 1952, the sub-department of Parasitology, which had been established in 1944, was accorded the status of a full department, continuing under the direction of Dr. A. Murray Fallis. The sub-department had been made possible by the co-operation of the Ontario Research Foundation in permitting Dr. Fallis, a senior member of the staff, to provide instruction in the School of Hygiene. In 1953, instruction in public health education was extended and Miss Margaret Cahoon was appointed in the Department of Public Health Administration.

In 1949, medical care studies were commenced in the Department of Public Health Administration, with the support of The Rockefeller Foundation, and Dr. G. H. Hatcher was appointed to conduct the studies. A course in medical care administration for non-medical members was offered in the School.

The School of Hygiene suffered great loss in the death of Dr. Donald T. Fraser on July 19, 1954. As Head of the Department of Hygiene and Preventive Medicine and as Associate Director of the School and the Connaught Laboratories he had contributed richly to their development. Appreciation of his work has been expressed by the Graduates' Association of the School of Hygiene in establishing the Donald T. Fraser Memorial Medal in the School of Hygiene. Dr. M. H. Brown was appointed to succeed Dr. Fraser in the Department of Hygiene and Preventive Medicine. The School also was deprived of the valued services of Dr. Donald Y. Solandt, Head of the Department of Physiological Hygiene, who passed away on March 30, 1955, in his forty-ninth year following a long illness. Dr. A. M. Fisher, Associate Professor, was appointed Acting Head of the Department.

Research has been of fundamental importance in the School of Hygiene. It has been recognized that the conduct of research is essential to teaching. Research has been made possible by grants-in-aid from sources outside the University proper, including the Ontario Department of Health; the Government of Canada through the Public Health Research Grants in the Department of National Health and Welfare, the National Research Council and the Defence Research Board; the Rockefeller Foundation; the W. K. Kellogg Foundation; the National Foundation for Infantile Paralysis, New York; Robert Gould Research Foundation; the National Vitamin Foundation; and the National Cancer Institute of Canada. Throughout the years the Connaught Laboratories have generously supported research in the departments of the School.

In 1955, the School consisted of eight departments and one sub-department, including the three original departments; namely the Departments of Hygiene and Preventive Medicine, Epidemiology and Biometrics, and Physiological Hygiene. To these had been added, the Departments of Chemistry in Relation to Hygiene and Sanitation, Public Health Administration, Public Health

Nutrition, Parasitology, and Hospital Administration. The Sub-department of Virus Infections completed the organization. During the year 1954–1955 the number of students receiving instruction in the School was 1,061 of whom 81 were postgraduate students. From the commencement of postgraduate teaching in 1912, 554 candidates received the Diploma in Public Health; 70, Master of Applied Science (Engineering); 63, Diploma in Veterinary Public Health; 42, Diploma in Hospital Administration; 26, Diploma in Dental Public Health; 24, Certificate in Public Health and 7, Diploma in Industrial Hygiene, making in all, 776. To this number should be added the candidates who attended courses in the School of Hygiene and who received the degrees of Master of Arts and Doctor of Philosophy.

Following the retirement of Dr. R. D. Defries in June 1955, the administration of the School was vested by the President of the University in a Committee for the session 1955–1956 under the Chairmanship of Professor R. F. Farquharson, Head of the Department of Medicine, with Dr. D. L. MacLean as Secretary. Dr. Defries, on his retirement, had completed forty-two years of continuous service in the development of postgraduate teaching in public health in the University of Toronto and forty years in the Connaught Medical Research Laboratories. Dr. J. K. W. Ferguson, Professor of Pharmacology, succeeded Dr. Defries as Director of the Connaught Medical Research Laboratories and Dr. Andrew J. Rhodes, Professor of Virus Infections and Director of Research, Hospital for Sick Children, Toronto, as Director of the School of Hygiene. These appointments evidenced the great development of both institutions and the planning for an expanded program of teaching contemplated in the University of Toronto during the next ten or fifteen years when it is expected that the student enrolment will be doubled.

Alberta Division
Canadian Public Health Association

ANNUAL MEETING

September 4, 5, 6, 1957

MacDonald Hotel
Edmonton, Alberta

Problems of Packaged, Ready-to-Eat, Meat Products

RANDOLPH M. FRIESEN, B.Sc.[1]

SANITARIANS in the public service are interested primarily in protecting the health and well-being of the public. Sanitarians in the food industry are equally interested in this problem. It is good business to be so. It is also obviously good business for a food manufacturer to have a sanitation program that will avoid consumer complaints and possible financial loss through spoilage during manufacture and after the product is shipped to the trade. With these points of view in mind, let us review some of the facets of sanitation as they pertain to ready-to-eat, prepackaged meats.

The sanitarian's responsibility, be he in the public service or in the employ of a food manufacturer, is rapidly increasing. The housewife today likes to buy foods in a ready-to-eat or semi-prepared state. It has been stated that 60% of all meat sold today is in the prepackaged form. (1) Because the consumer likes to examine the product at close range, the open type, refrigerated counter is in vogue. However, in many stores, even in modern ones, one still sees perishable products placed on tables and counters without any refrigeration. This results in a considerable keeping quality problem and would seem to indicate a lack of knowledge on the part of the retailer.

From a public health point of view, perhaps the most important thing is the possibility of food poisoning organisms developing in products that are poorly handled and inadequately refrigerated. Staphylococcus food poisoning is by far the most common because the organisms involved are very prevalent in nature. Fortunately, not all strains of staphylococci produce enterotoxin, but the prevalence of such poisonous types makes it quite likely that many foods that are handled by humans will be contaminated with this organism. If the food is a suitable medium, if the contaminating load is great enough, and if the temperature is right for rapid growth, sufficient enterotoxin to cause illness will be produced. The temperature range for enterotoxin production is 60° F. to 115° F. with the optima in the range of 70° F. to 97° F., depending upon the characteristics of the strain. (3)

It is important to note that enterotoxin production by staphylococci is a function of growth. It has been shown(5) that in a suitable medium even though contamination is very heavy with enterotoxin producing staphylococcus, no enterotoxin will be produced if the medium remains under refrigeration. Experiments have shown that toxin development does not take place below 60° F., but for an adequate safety margin it is wise to consider the incubation danger zone to be 50° F. to 120° F. (3) The shortest period of time required for

[1]Chief Chemist, Swift Canadian Co., St. Boniface, Manitoba.

a product to become toxic is difficult to establish because of the shortage of human volunteers but in one experiment 5 hours was sufficient. The possibility remains that less time would be sufficient under optimum conditions.

It should be emphasized that dangerous levels of enterotoxin may be produced without any other signs of spoilage. The product may contain sufficient toxin to be dangerous yet may be organoleptically sound in every respect. This is particularly true in pastries such as the cream puff.

The two most important considerations with regard to keeping quality of food products, whether one has food poisoning or only appearance and palatability in mind, are sanitation and temperature. This is particularly applicable to meat products. The reason is, of course, that meat is such an excellent food, not only for humans but for micro-organisms as well.

The quality problems one might encounter in the self-service, prepackaged meats would include microbiological action, discolourations, dehydration, chemical action, and flavour changes. Only the first two will be discussed here since they are the main concern of the sanitarian, although it is unlikely that one could have any one of these problems without also having one or two of the others.

The most prevalent type of microbiological spoilage on prepackaged meat products is slime or mold development on the surface of the product inside the package. Mold can quite easily be recognized by almost everyone, but slime development especially in the early stages is not always as easy to detect. Occasionally, a product may be described as greasy, when actually the condition is due to the growth of slime organisms on the surface. The existence of a slimy condition on the surface of product can be recognized by drawing a knife blade at right angles across the surface of the product. The accumulation of a soft creamy substance on the knife consists virtually entirely of bacterial cells.

There is great diversity both as to type and characteristics of the organisms involved in slime formation. The American Meat Institute Foundation in a recent study reported (2) that 353 cultures of micro-organisms were isolated and identified from 36 packages of frankfurters that had been allowed to develop slime in the refrigerator at temperatures as low at 35° F. Most of these were lactic acid bacteria, a good number were micro-bacteria and others, and 78 were yeasts. In view of the prevalence of staphylococcus in nature, the next point is surprising and perhaps explains the reason for the rarity with which food poisoning is traced to commercial sausage manufacturers. Only one of the 353 proved to be a food poisoning type of staphylococcus. It was greatly outnumbered by lactic acid bacteria on the particular frankfurter it was isolated from, and probably had not produced enough enterotoxin to be harmful.

Evans *et al.* (2) found that the number of micro-organisms directly introduced on to the surface of the product during processing is generally low even when handling conditions are poor. This being so, extensive growth of micro-organisms on the product must take place before spoilage will occur. The controlling factors for this are temperature and time, and of course these are inter-related. It is obvious that the lower the temperature the longer the keeping time. Bacteria that will grow at 32° F. will grow at least *twice* as fast

at 40° F. Hence a product will keep *twice* as long at 32° F., as at 40° F. and *four* times as long at 32° F. as it will at 50° F. (2)

Another factor bearing on the keeping quality of prepackaged meats is the type of packaging material used. A packaging material may serve more than one purpose but its main purpose is protection. There are two main types of packaging materials—cellophane, which is relatively permeable to air and moisture, and saran or laminated polyethylene, which is relatively impermeable to air and moisture. There are many variations in different packaging materials with regard to degree of permeability of air and of moisture. A suitable material is available for almost any particular combination of oxygen permeability and moisture retention.

Cellophane, being permeable to air, will permit the growth of both aerobic and facultative anaerobes. The problem of moisture condensation on the inside of the wrapper is not as important as one might think because any prepackaged meat product that is moist enough to appear fresh and palatable is also able to support the growth of micro-organisms without additional moisture.

The other type of film which is relatively impermeable to air and moisture is suitable for vacuum packaging. Good vacuum packaging in a suitable film will prevent the growth of mold and some types of bacteria and this has certain advantages as far as keeping quality is concerned. Unfortunately, its advantages have sometimes been overestimated and the technique grossly abused. Bacteria causing greening of cured meats grow as well with or without air, and perhaps grow better in vacuum packages than in packages that are permeable to air because their rate of proliferation is not restricted by aerobic micro-organisms. Even though the micro-organisms that cause discolouration may be growing extensively on the surface of vacuum packaged goods, they will show no discolouration or other deleterious effects as long as the seal on the package is perfect. When the package is opened, oxidation occurs and the discolouration may appear within a few hours. (2) It has been shown (4) that the micro-organisms involved in discolouration of cured meats are usually of the genus *Lactobacillus* and genus *Leuconostoc*. None of the micro-organisms involved are of any pathogenic significance.

The discolouration problems mentioned so far have dealt mainly with bacterial spoilage on the outside of the product and were caused by factors entering into the process after cooking. Green rings, cores and spots occurring in the interior of the sausage can be attributed to the raw materials used and/or to the cooking process. This type of greening is caused by bacteria and the most important consideration is the bacterial load in the raw trimmings used to make the sausage. It is impossible to have trimmings that are sterile but there is a margin of safety of the bacterial load beyond which the normal curing materials, smoking and cooking operation will not prevent the formation of greening in the finished sausage. It is, therefore, important that clean fresh materials be used, and that all equipment, tools, knives, etc., used during trimming be actually clean, not just apparently clean. There should be scrupulous cleanliness at every point. The temperatures should be low in the trimming room, as well as in the storage room. During the manufacture of the sausage the operation should move forward rapidly with no delays at any stage.

Cooking of the sausage must, of course, be adequate for efficient pasteuriza-

tion to reduce the bacterial load to a safe level. It should be remembered, however, that because of practical difficulties cooking cannot be relied upon to prevent greening. Temperatures upwards of 174° F. are required to prevent the appearance of green discolouration in sausage originally contaminated with the causative organism. Such high temperatures will cause production difficulties because of heavy shrinkage, wrinkling, bursting and toughness.

In any food manufacturing operation where microbiological spoilage is a problem, the flow sheet method of microbiological analysis has been found to be of great value in setting up a proper production schedule. This method is particularly applicable to sausages and cured meats. Basically, this method consists of microbiological analysis of samples taken of all raw materials, of the product at each stage of the operation, and of the finished product, recording for each the holding time and temperature, as well as any other pertinent data. A study of the results thus obtained and a knowledge of the growth curves of bacteria makes it possible to select efficient operating methods for the process under study.

A review of the growth curves of bacteria as described by Jensen (3) will show how important an understanding of this phenomenon is in the setting up of a processing schedule. When bacteria are transferred to a suitable substrate, the rate of multiplication varies considerably with time. These rates may be differentiated and for practical purpose may be divided into five phases. (Fig. 1).

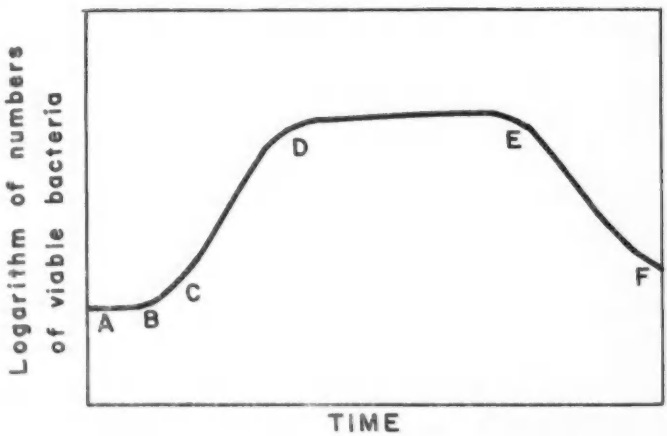

FIG. 1. General Form of the curve of the multiplication rates of bacteria.

The first phase (A–B) is called the "initial stationary phase" during which there is no apparent increase in numbers. When multiplication starts, it proceeds slowly at first. This is the "lag phase" (B–C). The third is the "logarithmic phase" (C–D), the period of most vigorous growth, when the cells are dividing at such a rapid rate that the logarithms of the numbers against time show a straight line. This third phase is important. Here enzymes of various kinds appear, sulphides and peroxides are formed, toxins may appear, and all the activities of the organisms are accentuated. The fourth phase is

the "stationary phase" (D–E), when the numbers again remain the same. Finally, when the medium becomes unfavourable for growth, the "period of decline" (E–F) sets in when growth slackens and finally ceases altogether.

According to Jensen, all of these phases are dependent so far as time is concerned, upon the following conditions: size of inoculum, age of inoculum, frequency of transferring, stage of growth of inocula, nature of the micro-organisms, temperature and nature of medium.

This conception of bacterial growth is applied to every step in flow-sheet analysis of processing meat and meat products. Fortunately, every processing step may be accomplished in the lag phase of all microbial growth. Utilizing this concept, bacterial discolouration and other bacterial spoilage can often be predicted before they occur and operations and storage conditions adjusted accordingly.

One "discolouration" problem has no sanitary significance, but it does cause unwarranted suspicions about the edibility of cooked meats. The condition is iridescence, (3) and is quite frequently seen on sliced cured meats such as ham, as well as sliced cold roast beef, lamb, etc. The colour is a structural colour as opposed to a pigment colour. It is due to the breaking up of white light by the fibrous character of the surface of the sliced meats, similar to the breaking up of white light into the colours of the spectrum by a prism or the colours seen when light strikes a film of oil on the surface of water.

The fading of the colour of cured meats is a major problem particularly with present-day packages and show-cases. It has been demonstrated by Ramsbottom *et al.* (6) that light and oxygen cause fading of cured meats. The fading is proportional to the intensity of the light and time of exposure. The type of lamps used is immaterial if the intensity is the same, and filtering out the ultra-violet light from the lamps does not lessen the discolouration. Since the reaction of fading is essentially one of oxidation with light catalyzing the reaction, there are three solutions to the problem: the use of oxygen-free packages; the use of opaque packaging; or the quick turnover of sales before discolouration can occur.

It has been said that successful food-packing operations may be likened to a "race between micro-organisms and the consumer, with the stakes going to the latter". As mentioned earlier, there are several other factors that enter into the problems of producing foods that are safe and acceptable to the consumer, but sufficient has been written to illustrate the extreme importance of sanitary conditions at all stages in handling meat products. With ever-increasing knowledge and techniques, and with a strong and enlightened force of Food Technologists and Sanitarians we can continue to look forward with confidence to good, wholesome, and safe foods.

REFERENCES

1. Dyson, D.: Canadian Packaging, February 1956.
2. Evans, J. B., and Niven, C. F. Jr.: American Meat Institute Bulletin No. 24, October 1955.
3. Jensen, L. B.: Microbiology of Meats. 3rd Ed. The Garrard Press, 1954.
4. Niven, C. F. Jr., Castellani, A. G., and Allanson, Virginia: J. of Bact. 1949. 58, No. 5.
5. Dack, G. M.: Food Poisoning. 2nd Ed. The University of Chicago Press. 1949.
6. Ramsbottom, J. M., Goesser, P. A., and Schultz, H. W.: Food Industries. February 1951.

Canadian Journal of Public Health

EDITORIAL BOARD

R. D. DEFRIES, C.B.E., M.D., D.P.H., LL.D., *Editor*

J. T. PHAIR, M.B., D.P.H., *Associate Editor* CYNTHIA PALMER, B.A., *Editorial Assistant*

Advisory Editorial Board: J. H. BAILLIE, M.D., D.P.H.; GORDON BATES, M.D.; A. E. BERRY, M.A.SC., C.E., PH.D.; J. G. CUNNINGHAM, B.A., M.B., D.P.H.; C. E. DOLMAN, M.B., PH.D., D.P.H., F.R.C.P., F.R.S.C.; EDNA L. MOORE, REG.N., LL.D.; G. D. PORTER, M.B.; A. H. SELLERS, B.A., M.D., D.P.H.; F. O. WISHART, M.A., M.D., D.P.H.; J. WYLLIE, M.A., M.D., CH.B., B.SC., D.P.H.

KNOW YOUR ASSOCIATION—PROVINCIAL ORGANIZATIONS

THE provision of eight provincial organizations constituting provincial branches or affiliated bodies is important in the development of the Canadian Public Health Association and the advancement of public health in Canada.

In 1889, the need for an association which would bring together medical officers of health resulted in the formation of the Ontario Health Officers' Association and although this body functioned for only a few years it led to the first efforts to create a national public health association. In 1893, such a body was established by Dr. Edward Playter and some members of the Ontario Health Officers' Association and bore the name Dominion Institute of Public Health. Although unsuccessful, it was the forerunner of the Canadian Public Health Association which was established in 1910 with an Ontario charter.

The need for an annual conference of public health personnel was evidenced from the commencement of organized public health. Those engaged in community health work felt the need for discussing problems, for developing methods and plans, and defining objectives. To learn of the work of others is always helpful. In 1912, the Ontario Health Officers' Association was re-established and it became part of the duties of a medical officer of health to attend this annual public health conference, the expenses being provided by each health officer's municipality.

At the same time in Quebec, a similar annual meeting of health officers was provided by the Superior Board of Health. Subsequently, a similar organization was formed in Nova Scotia. These early professional associations were composed of physicians. In Saskatchewan, in 1924, the Saskatchewan Public Health Officials' Association was established extending the membership to include all engaged in public health. In furthering the organization of provincial health associations the Canadian Public Health Association has urged the inclusion in membership of all members of health departments. It is pleasing that all the provincial branches or affiliated associations provide membership for all who are engaged in public health. The provincial branches and associations include: the Alberta Division, the British Columbia Branch, the Atlantic Branch (Nova Scotia), the New Brunswick-Prince Edward Island Branch, and the Manitoba

Public Health Association, the Ontario Public Health Association and La Société d'Hygiène et de Médecine Préventive de la Province de Québec.

To speak for the provincial associations there must be a national body which is fully representative. To serve the members in all provinces there must be a national scientific journal in the field of preventive medicine published by the Association. It is through the Journal that the Association makes a most important contribution in strengthening and improving local health services. To permit discussion and to further constructive planning a national public health conference must be held annually at which the findings of committees reporting on special problems may be presented. The Canadian Public Health Association is now in a position through its branches and affiliated associations to contribute most effectively to public health advancement in Canada. The provincial branches and associations are a vital part of the Association and the strength of the national body resides in the provincial associations. Through the services of all its officers, voluntarily contributed, the work of the Association is being energetically forwarded. In this issue of the Journal the first of the series of reports presented at this year's annual meeting are presented. These include the reports of the Honorary Secretary, the Honorary Treasurer and the Editor of the Canadian Journal of Public Health. The reports of the various committees of the Association will be outlined in subsequent issues of the Journal. These reports should be read by every member in order that he may know the work of his Association.

ROY FRASER, B.S.A., M.A., F.R.M.S., LL.D. (*Mount Allison*)

On April 24, following an illness of many months, Dr. Roy Fraser, Emeritus Professor of Biology, Mount Allison University, passed away at his boyhood home in Fitzroy Harbour, Ontario, near Ottawa. His was a spirit made invincible by his Christian faith. In a letter he wrote—"My surgeon gave me a year—maybe a year and a half. . . . But there is no sense of impending doom. While this diseased body will die—I won't die, so I fear no evil and am very happy and unspeakably grateful for the loving kindness and care of my Shepherd through sixty-seven years. My only regret is that I made such a small payment on so great a debt for I owe so much to my students and colleagues, friends, to my family and to God's goodness." So passed a great teacher, a true scientist and a humble follower of Christ. Last year, the Canadian Public Health Association honoured him with honorary membership which he treasured through his illness as the expression of his many friends in public health. His name will always be cherished and in the hearts of his students will live the inspiration of his life.

The Canadian Public Health Association

Annual Report

1956-1957

PART II

REPORT OF THE HONORARY SECRETARY

G. W. O. Moss, M.D., D.P.H.

EACH YEAR it is customary to begin the report of the Honorary Secretary with an observation on the last annual meeting. Memories of the hospitality and goodwill of the Maritimes will long remain with all those who attended that most successful meeting in Saint John in 1956. Hearty congratulations are due our hosts on that occasion, the New Brunswick–Prince Edward Island Branch of the Canadian Public Health Association. That this forty-fourth annual meeting was a scientific and administrative success as well as a social success is evidenced by the papers and reports of business of that meeting subsequently published in the Journal.

At the last annual meeting a pleasing innovation was the presentation of a Certificate of Office, appropriately framed, to Dr. J. A. Melanson as retiring President. The Executive Council directed that each of the former presidents should receive the certificate and that the Secretary should express to them again our thanks for their real part in the development of the Association.

One looks forward with anticipation to this year's annual meeting, our forty-fifth, which will be held in conjunction with the eighth annual meeting of the Ontario Public Health Association. On this occasion too, a special welcome is accorded the State and Provincial Health Authorities of North America, whose conference immediately precedes our meeting. It is hoped their stay with us will be a rewarding and enjoyable one.

A word of appreciation and tribute is due our President, Dr. L. A. Pequegnat, Medical Officer of Health of the City of Toronto. Dr. Pequegnat's interest and activities in the affairs of the Association have extended over many years. During this past year, his supervision of the work of the Association through the activities of the Executive Committee has well prepared him for his presiding role at the annual meeting of the Executive Council.

During the past year, important work has been conducted by various committees of the Association, most of which is reported elsewhere in detail. Dr. J. H. Baillie, Dr. Mosley and Dr. Moss have prepared a draft of the third revision of the Salary Survey at the time of writing this report and it is hoped to have this draft reviewed by a committee representative of all professional and technical groups within the Association prior to the annual meeting of the Executive Council. Dr. Stewart Murray, President-Elect, has chaired the Committee on Social Security which has been reviewing the Association's statement of policy formulated in 1943 on the importance of preventive medicine and public health in national health insurance. It will be recalled

that by resolution at its forty-fourth annual meeting the Association reaffirmed its position in the matter of comprehensive nation-wide health insurance and endorsed the principle of hospital insurance as an acceptable prelude to broader coverage. As requested by the Executive Council last year following the presentation of Dr. Wherrett on the need for co-ordination among voluntary health agencies, Dr. Murray will report on the suggestions offered by Dr. Wherrett.

Because the strength of any organization rests with its membership, the Association has asked its Committee on Membership, under the Chairmanship of Dr. C. C. Stewart, to plan and carry out with the Provincial Branches and Associations an intensive campaign to enrol the maximum number of public health workers as conjoint members. An important feature of conjoint membership in the Provincial and National bodies will be a subscription to the Canadian Journal of Public Health at no cost to the individual other than the membership fee. Such an arrangement is made possible through the support of the Association by the various Provincial Health Departments, either directly or indirectly through the Branches. In this latter vein, one might single out the Alberta Division of the Association. After a number of years' work, including the registration of the Division in accordance with the laws of the Province of Alberta, the officers of this Division have obtained the support of the Provincial Department of Health in their operations. The officers and members of the Alberta Division have decided that this financial support will be used to furnish the Journal to each member in Alberta.

I am pleased to report that plans for the 1958 meeting in Vancouver are well advanced. Many of the committees are already functioning. This meeting, to be held during the week beginning Monday, May 19, should prove unique in our experience. Not only are we meeting with one of our Branches, as is our custom, on this occasion the British Columbia Branch, but we will also be joined by the Western Branch of the American Public Health Association. Preliminary arrangements have been completed and a firm reservation has been made for the period June 1, 2 and 3, 1959 when we shall meet in Montreal with La Société d'Hygiène et de Médecine Préventive de la Province de Québec. It is intended to meet with the Atlantic Branch in 1960 and the Saskatchewan Branch in 1961 but no definite plans have been concluded.

The Association has been given office accommodation in the School of Hygiene building, University of Toronto. This has been an expression of appreciation of the work of the Association and it is pleasing that Dr. A. J. Rhodes, Director of the School of Hygiene, has expressed his approval of this provision.

Last fall, within the space of a few weeks, the Association was faced with a complete change-over of office staff. Mrs. Joyce Howes, Editorial Assistant for nearly three years, resigned as her domicile was being transferred to Ottawa. The Association is indeed grateful for her faithful service and wishes her every success in her new home. Fortunately, the services of Mrs. Cynthia Palmer, B.A., were at once obtainable and the assistant editorship continued without interruption. Miss Irene Dyment, office assistant also resigned and her place has been taken by Miss Ruth Roness. Although the Honorary Officers were called upon to assist in the more detailed and routine operation of the

Association during this period, the speed with which the new staff adapted themselves speaks well for their aptitude. Mrs. Olive Munro, a full-time member of the office staff some years ago, kindly consented to return and assist with the revision of the Salary Survey, her experience with the previous two surveys being a valuable asset. As the office load has increased recently, it has been found necessary to ask Mrs. Munro to continue her services on a half-time basis. The officers of the Association are indeed grateful to all the staff, past and present, for the faithful discharge of their duties.

REPORT OF THE HONORARY TREASURER

William Mosley, M.D., D.P.H.

OPERATIONS FOR THE FISCAL YEAR ending December 31, 1956 show an excess of revenue over expenditure of $1,147.27. In view of the fact that for some years there were deficits in our operations it is gratifying that for the last three years our revenue has exceeded our expenditures. However, this year's margin is only one-quarter as much as that of the preceding year.

It is particularly gratifying that the Federal Government and all of the provinces have supported the Association in response to the presentation of a statement of the services rendered by the Association including the supplying of the Journal. The adoption by a number of the provinces of this annual account from the Association is most encouraging. It is hoped that ultimately all of the provinces will approve this method of assisting the Association in its important work instead of by a grant which is subject to withdrawal if the policy of the government changes in regard to grants.

The fundamental need of the Association for a reserve fund is gradually being met through the accumulation of small surpluses. The objective has been a minimum of $25,000 and it is hoped that this may continue to be added to through the years. When it is remembered that the Association expenditures are approximately $600 a week and that unforeseen emergencies may arise which might rapidly reduce the Association's income the provision of a reserve is an absolute necessity. For many years the Association was forced to limit its work and sometimes to reduce its services through having no reserve, in fact, deficits were incurred.

In closing the report, I would urge that every effort be made to increase the income of the Association through soliciting the support of industry and various agencies as benefactors (or other suitable title) and through the enrolment of a greatly increased number of public health workers as members. In this connection, I am impressed by the recommendations of the "Task Force" of the American Public Health Association which with the endorsation of the last annual meeting has embarked on a campaign to raise $200,000 additional revenue for the American Public Health Association. When considering the needs of our own Association we must make plans also to strengthen the financial support of our Association. I say this because our present income will likely prove inadequate this year and a deficit will be recorded owing to the increased cost of the Journal, its increased distribution, and work of the Salary Survey Committee and other committees of the Association. To avoid a deficit we must increase our revenues this year.

Schedule A

CANADIAN PUBLIC HEALTH ASSOCIATION
REVENUE AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED 31ST DECEMBER, 1956

EXPENDITURE

Printing	$15,824.84
Postage on Magazines and Mailing Cost	1,203.92
Honoraria	115.00
Salaries	5,871.68
Travelling	296.62
Stationery and Office Supplies	255.82
Postage, Telephone and Express	657.76
Unemployment Insurance	66.21
Commissions Paid	598.89
Annual Meeting	768.79
Laboratory Section	674.18
Sanitary Inspectors'–Examinations	120.78
Manuals	611.50
Correspondence Course	400.62
Reprints	726.06
Salary Survey	175.80
Ontario Public Health Association	.85
Committee on Membership	23.82
Miscellaneous Expenses	569.22
Provision for Depreciation:	
Office Furniture and Equipment	—
Bad Debts Written off	—
Discounts and Exchange	149.87
	$29,110.53
Excess of Revenue over Expenditure for the Year transferred to Surplus Account	1,147.27
	$30,257.80

REVENUE

Advertising		$ 5,876.50
Subscriptions–less Refunds		3,021.53
Membership		3,274.00
Fees for Services Rendered–		
Dominion of Canada	$ 5,000.00	
Province of Ontario	2,500.00	
Province of Quebec	1,200.00	
Province of British Columbia	800.00	
Province of New Brunswick	600.00	
Province of Manitoba	700.00	
Province of Saskatchewan	700.00	
Province of Nova Scotia	600.00	
Province of Prince Edward Island	100.00	
Province of Newfoundland	100.00	
		12,300.00
Annual Meeting		1,283.48
Laboratory Section		1,098.70
Sanitary Inspectors'–Examinations		1,005.00
Manuals		192.00
Correspondence Course		925.50
Reprints		927.34
Interest on Investments		200.00
Savings Bank Account		153.75
		$30,257.80

CANADIAN PUBLIC HEALTH ASSOCIATION
BALANCE SHEET
AS AT 31ST DECEMBER, 1956

ASSETS

Cash on hand		$ 25.00	
Cash in bank—Current	$ 1,233.18		
Savings	15,232.96		
		16,466.14	
Accounts Receivable	$ 2,639.92		
Less: Allowance for Bad Debts	35.00		
		2,604.92	
British Columbia Public Health Advance		100.00	
Deposit with Postmaster		20.00	
			$19,216.06
Investments			5,000.00
Canadian Journal of Public Health		$ 1,000.00	
Office Equipment	$ 1,774.09		
Less: Accumulated Depreciation	1,774.09	—	
			1,000.00
Prepaid Expenses			446.06
			$25,662.12

LIABILITIES

Accounts Payable		$ 1,344.41
Prepaid Subscriptions		335.00
Surplus		
Balance as at 31st December, 1955	$22,835.44	
Add		
Excess of Revenue over Expenditure for the Year	1,147.27	
Balance as at 31st December, 1956		23,982.71
		$25,662.12

Submitted with our report of this date attached,

TORONTO, Ontario,
15th March, 1957.

TESKEY, PETRIE & BURNSIDE
Chartered Accountants.

CANADIAN PUBLIC HEALTH ASSOCIATION
COMPARATIVE BALANCE SHEET

ASSETS

	31st Dec., 1956	*31st Dec. 1955*	*Increase*	*Decrease*	*Net Plus or Minus*
Cash on hand	$ 25.00	$ 25.00	—	—	
Cash in Current Account	1,233.18	10,401.14	—	$9,167.96	
Cash in Savings Account	15,232.96	6,479.21	$ 8,753.75	—	
Accounts Receivable—					
Less Allowance	2,604.92	962.34	1,642.58	—	
B.C. Public Health	100.00	100.00	—	—	
Postmaster	20.00	15.00	5.00	—	
Investments	5,000.00	5,100.00	—	100.00	
Canadian Journal of Public Health	1,000.00	1,000.00	—	—	
Office Equipment Less Depreciation	—	—	—	—	
Prepaid Expenses	446.06	213.15	232.91	—	
	$25,662.12	$24,295.84	$10,634.24	$9,267.96	$1,366.28

LIABILITIES

Accounts Payable	$ 1,344.41	$ 1,110.40	$ 234.01		
Prepaid Subscriptions	335.00	350.00	—	$ 15.00	$ 219.01
As per Revenue and Expenditure Account					$1,147.27

REPORT OF THE EDITORIAL BOARD

R. D. Defries, C.B.E., M.D., D.P.H., LL.D., Editor

J. T. Phair, M.B., D.P.H., Associate Editor Cynthia Palmer, B.A., Editorial Assistant
Advisory Editorial Board: J. H. Baillie, M.D., D.P.H.; Gordon Bates, M.D.; A. E. Berry, M.A.Sc., C.E., Ph.D.; J. G. Cunningham, B.A., M.B., D.P.H.; C. E. Dolman, M.B., Ph.D., D.P.H., F.R.C.P., F.R.S.C.; Edna L. Moore, Reg.N., LL.D.; G. D. Porter, M.B.; A. H. Sellers, B.A., M.D., D.P.H.; F. O. Wishart, M.A., M.D., D.P.H.; J. Wyllie, M.A., M.D., Ch.B., B.Sc., D.P.H.

IN PRESENTING the report of the Editorial Board I am reminded of the fact that the Journal is now in its forty-eighth volume, having been continuously published since 1909. If one includes the forerunner of the Journal, the Canadian Sanitary Journal published from 1874 to 1893 by Dr. Edward Playter, a journal in the field of public health has been published in Canada for sixty-eight years. This is almost as long a history as that of the Canadian Medical Association Journal and its predecessors. The Canadian Public Health Association can be proud of its Journal and the place which it occupies as a scientific medical publication in the libraries of the world. The Journal is supplied to nearly four hundred libraries on this continent and in Europe and the articles published in the Journal are abstracted by leading publications thus bringing the articles to the attention of public health personnel in many countries. The Journal presents the progress of public health in Canada to people of many lands.

During the year the objective has been to present in each issue at least one paper on public health administration, medical care administration, environmental hygiene, public health nursing and to include one or more papers in other fields including laboratory work, child and maternal hygiene, industrial hygiene, dental public health and mental health. Mention of these individual fields has been made to remind you of the difficulty of presenting the many fields of public health in one Journal.

Through the co-operation of authors the length of individual papers has been reduced permitting the publication of additional contributions. Last year's volume contained fifty-nine major articles and this year's volume contains seventy-four articles. An addition of twenty-eight pages during the past year permitted increasing the section of "News", re-introducing "Book Reviews" and publishing "Association News". In answer to those who may feel that too few papers are contributed by non-medical members, it is of interest that during the past year forty-four articles were written by physicians and thirty by other members. Suggestions to authors have been published in several issues with the hope of making the papers more effective and in this connection requirements of the Journal for publication are being brought to the attention of all those who are presenting papers at annual meetings. It is hoped that each issue of the Journal will contain material of interest to special groups. It must not be forgotten, however, that those who are engaged in special fields are particularly in need of a Journal which presents the general field of public health in order that they may keep in touch with the whole subject.

The Executive Committee has approved the appointment of a small editorial committee to assume a major responsibility in publishing the Journal and has designated the editorial board as the advisory board. It is the desire of the Editor to nominate during the coming year a colleague as Assistant Editor who with the small editorial committee will take an increasing part in the publishing of the Journal.

During the year the Association lost the services of Mrs. Joyce Howes necessitated by her return to Ottawa and also the services of Miss Irene Dyment. Mrs. Howes has been succeeded by Mrs. Cynthia Palmer and Miss Dyment by Miss Ruth Roness. Mrs. Palmer's responsibilities include not only the preparation of the Journal in all its phases but assisting Dr. Moss with the work of the Association as a whole including the details of annual meetings, registration and examination of sanitary inspectors, operation of the correspondence course and other work of the Association.

The cost of printing the twelve issues constituting Volume 47, 1956 was $17,028.76 an increase of $2,874.92 over the previous year. No charge is made against the Journal for the editorial services or office space. The revenue for advertising amounted to $5,876.50 being an increase over the previous year of $665.41. The paid circulation as of December 31, 1956 was as follows: British Columbia, 327; Alberta, 254; Saskatchewan, 263; Manitoba, 287; Ontario, 758; Quebec, 202; New Brunswick, 97; Nova Scotia, 323; Prince Edward Island, 47; Newfoundland, 16. This is a total of 2,574 in Canada. In the British Commonwealth, the United States and foreign countries 401 copies were distributed. The total monthly circulation at the end of 1956 was 3,112.

I wish again to state that it is the aim of the Editorial Board to make the Journal of the maximum value to every public health worker. It is our hope that each member will keep a personal file of the Journal available for ready reference.

In closing this report I wish to express deep appreciation to Dr. Fraser Brockington, Professor of Social and Preventive Medicine, University of Manchester, England, who for the past ten years has contributed quarterly articles presenting the development of public health in Great Britain including references to medical care and social work. It is with great regret that I report that Dr. Brockington has found it necessary to discontinue these important contributions to the Journal.

NEWS NOTES

Federal

A technical dominion-provincial conference on morbidity statistics was held recently under Federal Government auspices in the Dominion Bureau of Statistics, Ottawa. Purpose of the conference was to explore Canada's needs for future statistics on general illness—its amount, type and distribution and its relationship to statistics on health care and health economics. Representatives of federal and provincial government departments and of several national health organizations discussed, in the light of changing patterns of morbidity, mortality and health services, how traditional health statistics series ought now to be supplemented to provide continuing statistical knowledge of all aspects of ill-health. A number of general and specific requirements were identified, alternative techniques of collection reviewed, and a consultative machinery recommended to carry conference findings forward to the stage of positive planning and action.

An international note suggestive of growing recognition of the importance of morbidity statistics in other countries was lent to the proceedings by the presence of Dr. R. Puffer of the World Health Organization and Dr. F. E. Linder, Director of the United States National Health Survey launched this year. Dr. G. D. W. Cameron, Deputy Minister of National Health, and Mr. Walter E. Duffett, the Dominion Statistician, co-chaired the meeting.

Dr. Bertrand Primeau, M.P.H., L.M.C.C., formerly head of the maternal and child health division of the Montreal city health department, has been appointed as medical consultant and chief of the medical rehabilitation and disability advisory service, Department of National Health and Welfare. Dr. Primeau graduated in medicine from the University of Montreal in 1933 and was in private practice for several years before joining the Montreal health department. He received his public health training at Harvard and holds a specialist certificate in paediatrics from the University of Pennsylvania. He has lectured extensively in the faculties of medicine, dentistry and pharmacy and in the schools of hygiene and social work, University of Montreal.

Dr. Jean F. Webb, chief, child and maternal health division, Department of National Health and Welfare, recently addressed the first annual meeting of the New Brunswick Co-ordinating Council for the Handicapped on understanding and meeting the needs of handicapped children. The meeting was held in Fredericton.

Hon. Dr. Donald A. Cameron, minister of Health, and Dr. A. J. Metcalfe, director-general of health services for the Commonwealth of Australia, spent three days in Ottawa early in June for discussions with officials of the Department of National Health and Welfare on problems of food and drug administration, the control of biologicals, federal grants-in-aid and the new hospital insurance plan.

Miss Esther Robertson, nursing consultant, child and maternal health division, Department of National Health and Welfare, spoke recently at an institute for matrons of municipal hospitals held at the University of Manitoba, Winnipeg. She outlined the functions of the federal child and maternal health division.

Hospital construction grants recently approved under the National Health Program include: *Newfoundland*—St. Patrick's Mercy Home, St. John's, $78,183; *Ontario*—Kingston General Hospital, $200,666; Hamilton General Hospital, $13,000; Saugeen Memorial Hospital, Southampton, $19,633; South Peel Hospital, Cooksville, $147,400; *Saskatchewan*—Swift Current Union Hospital, $50,046.

British Columbia

At the Western Branch, American Public Health Association meeting held in Long Beach, California, May 29–June 1, Dr. G. R. F. Elliot, Assistant Provincial Health Officer for the Province assumed the position of President of the Association for the ensuing year. The 1958 meeting of the Association is to be convened in Vancouver in association with the annual meeting of the Canadian Public Health Association.

Dr. Stewart Murray, Senior Medical Health Officer, Greater Vancouver Metropolitan Health Services, became President of the Canadian Public Health Association at the annual meeting held in Toronto in May. He will culminate his stewardship with the joint Western Branch APHA–CPHA meeting in Vancouver in May 1958.

Two physicians are returning from the DPH course at the University of Toronto and will join local health units. Dr. W. B. Laing will become Director of the Skeena

Health Unit at Prince Rupert, and Dr. G. D. Kettlys will be Director of the Cariboo Health Unit at Prince George, replacing Dr. H. M. Brown who resigned to take up an appointment in Alberta.

Mr. A. R. Shearer, formerly Technical Supervisor of Clinical Laboratory Services has been appointed Assistant Director of the Division of Laboratories. Succeeding Mr. Shearer is Miss Margaret Erskine.

Dr. Arthur Jones is leaving the Peace River Health Unit at Dawson Creek to become Director of the Upper Fraser Health Unit at Chilliwack. Dr. M. J. Wauchob, a graduate of Queen's University, Belfast, will succeed Dr. Jones as Director of the Peace River Health Unit.

Miss Marion Boyd is returning to the Selkirk Health Unit at Nelson after taking a course at McGill University in teaching and supervision in Public Health Nursing.

Alberta

Dr. A. Somerville, Deputy Minister of Health, left at the beginning of May to attend the World Health Assembly in Geneva.

A conference of municipal nurses and senior nurses of health units was held in Edmonton from May 15–17 under the chairmanship of Mrs. Dorothy McPhail, Director of Public Health Nursing in the Provincial Department of Public Health. Highlight of the agenda was a 1½-day symposium on Maternal and Child Health.

Among the guest speakers at the annual convention of the Alberta Association of Registered Nurses held at Banff from May 21–24 was Miss Dorothy Percy, Chief Nursing Consultant in the Department of National Health and Welfare, Ottawa. The main theme of the convention was Mental Health.

The eighteenth annual meeting of the Alberta Tuberculosis Association took place in Calgary on June 1. Speakers included Dr. T. J. Orford, Alberta Superintendent of Indian Health Services; Dr. H. H. Stephens, Medical Superintendent of the Aberhart Memorial Sanatorium, Edmonton; Dr. G. R. Davison, Director of Tuberculosis Control, and Dr. E. S. Orford Smith, Director of Local Health Services in the Provincial Department of Public Health.

Appointments to the newly-formed Edson Health Unit, which became effective July 1, include Miss Ethel Dragland as Senior Nurse and Mr. Edward Nadziak as Sanitary Inspector. Miss Dragland has spent the last three years with the Medicine Hat Health Unit, and Mr. Nadziak has been with the Provincial Department of Public Health.

Saskatchewan

The appointment has been announced of Mr. G. Allen Roeher to the position of Co-ordinator of Rehabilitation for Disabled Persons. Mr. Roeher has since 1953 been Executive Director of the Saskatchewan Council for Crippled Children and Adults, in Saskatoon. In his new position he will be responsible for the co-ordination of all activities in the province related to the rehabilitation of disabled persons. He will also act in a liaison capacity with the office of the National Co-ordinator of Civilian Rehabilitation of the Federal Government.

Ontario

Fifteen graduates of the Ontario Department of Health's Environmental Sanitation Training Centre received their diplomas as Certified Sanitary Inspectors from Deputy Health Minister Dr. J. T. Phair in a Queen's Park ceremony last month. Addressing the graduates, Ontario's Assistant Chief Medical Officer of Health, Dr. D. S. Puffer, stressed that team work in public health is essential.

Class members who received their C.S.I.(C) were: J. D. Anderson, Z. G. Bakic, D. J. Currie, L. A. Lychowyd, R. Pukas, J. W. Carnaghan, J. H. Ryan and P. R. Stone, all of Toronto; R. E. Birch, Kirkland Lake; I. E. Charlton, Belmont; R. R. Michel and J. M. Watt, Pembroke; K. E. Mitton, Brantford; C. J. H. Raiche, Timmins; and W. W. Wright of Chatham. The graduates will take up posts in various health departments throughout Ontario.

The C.S.I.(C) was also granted to Mr. Kenneth Pollitt, a graduate of the Royal Sanitary Institute of England, who wrote the examinations after completing a year's probationary period with the Halton County Health Unit.

The first permanent home of the Victorian Order of Nurses was officially opened in Ottawa recently by the Governor General. The 18-room, three-storey home was given to the VON by the late Russell Blackburn who was cared for by VON nurses during the final months of his life. The formal opening of the house was the climax of the Order's two-day annual meeting which also marked the Order's 60th anniversary year.

New Brunswick

For the first time in the history of public health in New Brunswick, a course for hospital cooks was held in Fredericton under the sponsorship of the Department of Health. The course was planned and conducted by the Nutrition Services Division under the direction of Miss Florence Swan, Senior Nutritionist, ably assisted by Marilyn

Trenholme, Thelma Sewell and Monique St. Hilaire, Junior Nutritionists. The course, which lasted from May 26 to June 1, was attended by 14 chefs and cooks of hospitals in all parts of the Province. All phases of food preparation and service were dealt with according to the special requests of those who attended the course. A unique feature of the course was a banquet held near the end of the week in honour of government officials, guest instructors and others concerned with the course. The banquet was prepared by the students themselves and the menu featured Atlantic seafoods. Those who partook of this banquet gave high praise for the excellence and variation of the cuisine. At this banquet, Dr. J. A. Melanson presented certificates to those who completed the course.

On Sunday evening preceding the course an informal reception was held for those attending. An official welcome was extended on Monday by: Hon. J. F. McInerney, Minister of Health and Social Services, Dr. R. J. Dolan, Director of Hospital Services, Colin B. MacKay, President of the University of New Brunswick, Deputy Mayor H. G. Hughson and Dr. J. R. Mayers, Director of Maternal and Child Health.

Misses Ray McKenzie, Phyllis Batt and Kathleen Buchanan, public health nurses with the New Brunswick Department of Health and Social Services, attended the annual meeting of the Canadian Public Health Association in Toronto. Miss McKenzie was an official delegate from the New Brunswick-Prince Edward Island Branch. Also in attendance were Sanitary Inspectors, Bentley Briggs, Arthur Burley and Ronald Hicks, who remained in Ontario for a field course in observation of local health units.

Dr. John Sterns who recently completed his course leading to the diploma in Veterinary Public Health at the University of Toronto has returned to his duties in York County as Sanitary and Meat and Food Inspector.

Dr. J. A. Melanson, Chief Medical Officer, recently attended the meeting of the Dominion Council of Health in Ottawa.

Mr. Emerson Wilby, Registrar General of Vital Statistics, attended a meeting of the Vital Statistics Section in Ottawa in early June.

Nova Scotia

On May 6 and 7 a Workshop for professional workers concerned with the rehabilitation of disabled people was held at the Nova Scotia Rehabilitation Center. The participants heard the medical aspects of various types of disabilities discussed by panels which included nine doctors. There followed discussions of vocational counselling, vocational training and employment of the physically disabled. Representatives of voluntary agencies were able to describe service rendered by their organizations and to discuss related services. A group of special cases was considered by a rehabilitation team. Attendance at the Workshop reached a total of 84. Participants considered it beneficial particularly from the point of view of acquainting them with the variety of service available to the disabled from various sources.

Books and Reports

MEDICAL OFFICERS OF HEALTH, 1848 to 1855 by C. Fraser Brockington, M.A., M.D., M.Sc., D.P.H., Barrister at Law. Published by Hodgetts Ltd., 72 Fleet Street, London, England, 1957. 51 pp. $1.50 post free.

In 1956, Professor Brockington contributed an essay on local history to "The Medical Officer" reviewing the first English medical officers of health in the period 1848 to 1855. The establishing of the General Board of Health in 1848 was in large measure the work of Edwin Chadwick and his "sanitary idea". William Duncan was the first medical officer of health and was appointed in Liverpool in 1847. John Simon was appointed in London in 1848. Dr. Brockington has gathered from many sources the appointments of the period 1848 to 1855 before the metropolitan medical officers of health were compulsorily appointed in 1855. Included is the first report of Dr. S. E. Piper, Medical Officer of Health to the Darlington Local Board of Health. It affords a picture of living conditions at that time which health officers of today may read with great interest. This is a little book which will be welcomed by those who are interested in knowing of our heritage in public health.

THE ROLE OF ALGAE AND PLANKTON IN MEDICINE by Morton Schwimmer, M.D., and David Schwimmer, M.D., F.A.C.P. Published by Grune & Stratton, New York and London. 1955. 85 pp. $3.75.

The authors of this monograph have brought together what is known about the relationship of algae and plankton to clinical medicine. World food shortages have focused attention on the nutritional utility of these substances for man and animals. The authors have indicated the potential medical value giving historical references and emphasizing possible immediate medical applications. They have presented data on nutritional, physiological, toxicological and public health problems. The bibliography contains 312 references most of which are not found in the usual medical index.

REHABILITATION LITERATURE, 1950–1955 by Earl C. Graham and Marjorie M. Mullen. Published by McGraw-Hill Co. of Canada Ltd. 1956. 621 pp. $15.60.

Two skilled librarians have indexed and annotated 5,214 periodical articles, pamphlets and books published in the six-year period from January 1950 to December 1955 relating to the medical care, education, employment, welfare and psychology of handicapped children and adults. Brought together in this one volume are references both to different professional specialty areas and to rehabilitation in various disability areas. Thus, the book has entries under such diverse subjects as audiometric tests, cerebral palsy, nursery schools, brain injuries, psychotherapy, paraplegia, religion. All types of disabilities are covered in this volume including disorders of sight and hearing and orthopedic handicaps. Compiled for the use of medical and related groups, this bibliography will provide indispensable aid to all concerned with any aspect of rehabilitation.